Chapter 5

Query Management Facility

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Chapter 5: Query Management Facility

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DEPARTMENT OF EDUCATION
UNITED STATES OF AMERICA

5.1 Introduction to QMF

Query Management Facility (QMF) is a powerful query and reporting tool. QMF allows you to enter a request to retrieve data from a database manager. The request you enter consists of simple English-like statements describing the data you want and the action (select, create, update, insert, or delete) you want to perform. The database manager returns the information to QMF when you request data. The data can then be formatted into formal reports using QMF's forms function.

5.1.1 Structured Query Language

The request you issue to the database manager is called a query. QMF offers three types of queries:

1. Structured Query Language
2. Prompted Query
3. Query By Example

This chapter discusses all three types of queries; however, it goes into the most detail about Structured Query Language.

- **Structured Query Language (SQL)**—SQL is an English-like language used for writing queries. SQL allows you to retrieve, create, and maintain data located in the database. Using SQL, you type a set of English-like instructions to the database manager. From these instructions, the database manager takes the action requested and returns the data to you. SQL queries provide you with the most flexibility in your query writing.

- **Prompted Query**—Prompted Query employs a set of prompts which ask you to respond to fill-in-the-blank questions, after which the system generates the appropriate query statements. Prompted Query is very simple to use and is great for beginners or occasional QMF users. You do not need to know SQL syntax to use Prompted Query.

- **Query By Example (QBE)** —QBE is another method of extracting data from the database. This method lets you create queries with relatively few keystrokes. This chapter will not discuss QBE in detail. However, for those users already familiar with the method, it discusses how to customize to a QBE environment.

5.1.2 Database 2

Database 2 (DB2) is a relational database management system. DB2 provides a central place to store data and processes the SQL request issued from QMF against that store of data. The data stored in DB2 may be shared among authorized users. The data can be accessed using any of the three types of queries in QMF.

Data is arranged in tables. These tables have names, and you must know the names of the tables that contain the data you need.

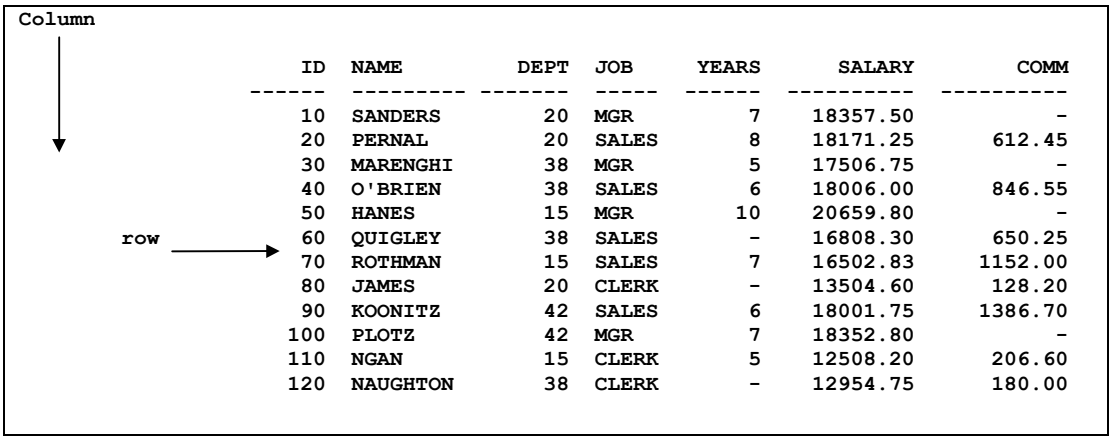
The data in a table is arranged in columns and rows. All columns are referred to by the names they were given when the table was created.

Columns:

- Appear vertically on the screen
- Contain data of the same kind
- Have names which appear at the top

Rows:

- Appear horizontally on the screen
- Contain different kinds of data about a single thing
- Have no headings



ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
10	SANDERS	20	MGR	7	18357.50	-
20	PERNAL	20	SALES	8	18171.25	612.45
30	MARENGHI	38	MGR	5	17506.75	-
40	O'BRIEN	38	SALES	6	18006.00	846.55
50	HANES	15	MGR	10	20659.80	-
60	QUIGLEY	38	SALES	-	16808.30	650.25
70	ROTHMAN	15	SALES	7	16502.83	1152.00
80	JAMES	20	CLERK	-	13504.60	128.20
90	KOONITZ	42	SALES	6	18001.75	1386.70
100	PLOTZ	42	MGR	7	18352.80	-
110	NGAN	15	CLERK	5	12508.20	206.60
120	NAUGHTON	38	CLERK	-	12954.75	180.00

Figure 5–1, Table Sample

Figure 5–1 shows a typical table containing personnel information. Each row represents an employee. The information stored in the table for each employee is shown in columns: Employee ID, Last Name, Department Assignment, etc. All tables in a database have this formatted arrangement of rows and columns regardless of content.

5.1.3 Sample Loan Table

Examples in this chapter use a sample DB2 table called LOAN, which lists loan amounts with associated data. The layout of LOAN is shown in Figure 5–2. Other tables will be introduced as more complex queries are discussed.

```
                          FFEL   PER          PER          CURR                    CURR
                          DUP    BEG          END          MAT          ACAD       LOAN
          NO  DT          ID     DT           DT           DT           LVL        STAT
  ----------  ----------  ----  ----------  ----------  ----------  ----  ----
     37000002  1980-01-01  A     1979-09-01  1980-06-30  1987-09-01  1     PF
     37000002  1981-10-08  A     1981-09-01  1982-04-30  1987-09-01  3     PF
     37000002  1983-03-24  A     1983-01-01  1983-04-30  1987-09-01  4     PF
     37000003  1991-09-10  A     1991-08-21  1992-01-20  1992-08-01  1     CA
     37000004  1987-09-14  A     1987-01-05  1987-09-15  1988-04-01  5     DU
     37000005  1980-09-30  A     1980-09-01  1981-06-30  1981-11-01  3     DC
     37000006  1992-11-03  A     1992-09-21  1993-06-15  1993-11-28  1     RP
     37000007  1990-01-16  A     1989-09-01  1990-05-30  1991-12-01  A     RP
     37000007  1994-07-26  A     1994-05-23  1994-08-12  1995-11-13  D     ID
     37000007  1994-07-26  A     1994-05-23  1994-08-12  1995-11-13  D     ID
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
  COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–2, Loan Table

5.1.4 The Interaction between DB2, SQL, and QMF

There are really three things you are learning and using: DB2, SQL, and QMF. QMF contains no data, but simply provides a place for you to enter a query and submit the query to the database manager, DB2. The query written in QMF uses SQL language.

DB2 is where the data is located. After the query is submitted, DB2 determines whether you are authorized to use the data. If you are, DB2 selects the data and returns it to QMF. QMF then combines the data with a format to create a report. Figure 5–3 illustrates this process.

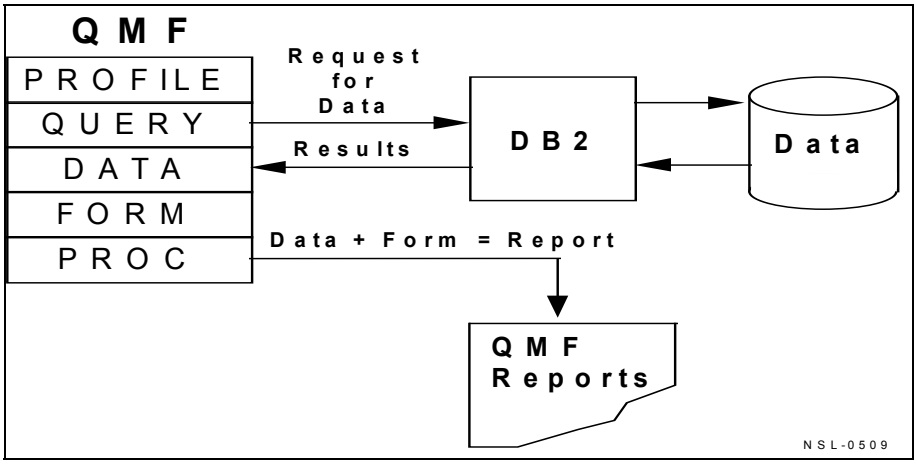


Figure 5–3, QMF Data Flow

There are five QMF areas, or object types:

1. **Profile**—Contains the QMF user profile. A profile details information about the QMF environment. Options such as case, language (query type), the number of lines on a printed report, width of a printed report, and printer with default settings are changed on this screen. The QMF command SHOW PROFILE displays this information.

2. **Query**—Contains the query that is being written or the most recent query that was run. When the command SHOW QUERY is entered or the **QUERY** key is pressed, the contents of the current query are displayed. All queries are written from this panel.

3. **Data**—Contains the data selected in the most recent query run. The data is not accessed directly; instead, the SHOW REPORT command shows the data formatted by the current form.

4. **Form**—Contains the format of how data is to be presented. When the SHOW FORM command is entered, the current form is displayed.

5. **PROC**—Contains the current procedure being written or the most recent procedure. A procedure contains a series of QMF commands with one RUN command. The SHOW PROC command displays the current contents of PROC. A procedure is very much like a macro in a word processing environment. It contains many QMF commands that are run together.

Objects in the database storage areas are temporary. You have to take special actions to save them or they disappear, either when you exit QMF or when you write something else over it. We discuss how to save the objects in temporary storage for later use.

5.1.5 Q.ERROR Log Handling

If you receive an error message when running or printing a query, that error is logged in the Q.ERROR_LOG. You should call the Customer Service Center (CSC) for assistance correcting that error and for advice on how to avoid making the same error in the future.

5.1.6 Starting a QMF Session

To start QMF, type ***Q*** at the "Option" prompt on the *NSLDS—ISPF/PDF Primary Option Menu* (Figure 5–4).

```
Menu  Utilities  Compilers  Options  Status  Help

                        ISPF Primary Option Menu
Option ===>

0  Settings      Terminal and user parameters          User ID . : SZP
1  View          Display source data or listings       Time. . . : 09:28
2  Edit          Create or change source data          Terminal. : 3278
3  Utilities     Perform utility functions             Screen. . : 1
4  Foreground    Interactive language processing       Language. : ENGLISH
5  Batch         Submit job for language processing    Appl ID . : ISR
6  TSOCmd        Enter TSO or Workstation commands     TSO logon : SPFNSLD
7  Dialog Test   Perform dialog testing                TSO prefix: SZP
8  ISPFWork      ISPF Object/Action Workplace         System ID : NSLP
P  Products      Program Products                     MVS acct. : TSOACCTN
                                                        Release . : ISPF 4.8



    Enter X to Terminate using log/list defaults


 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
```

Figure 5–4, NSLDS—ISPF/PDF Primary Option Menu

Note: Option **P** (Platinum Report Facility) is no longer available to ED. Use QMF instead.

After you have started QMF, the *QMF Home* panel displays (Figure 5–5).

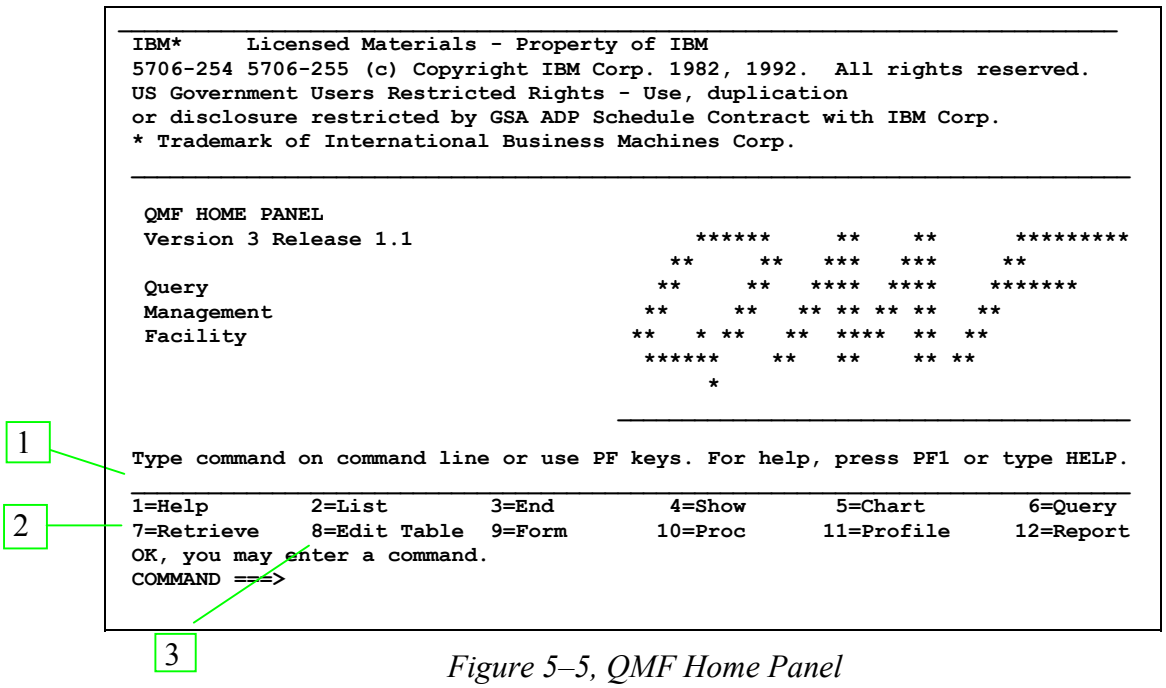


Figure 5–5, QMF Home Panel

At the bottom of the QMF Home panel, you see:

1. **Function Keys—**A function key performs a single operation. You can eliminate keystrokes by pressing a single function key to start the operation desired. We do not,

however, refer to these keys as function keys when referring to them by name. For instance, when this documentation prompts you to press the function key that displays your profile, it does so in this way: "Press the **PROFILE** key." By looking at the function keys available on this panel in Figure 5–5, you see that the PF11 key represents the Profile function. Press **PF11** to use the Profile function. Familiarize yourself with the functions displayed at the bottom of each QMF panel. On a PC, the PF keys correspond to the F keys on your keyboard. This helps you to know which key to press for a specific function. A Function Key list for each panel in QMF is provided in Section 5.8.

The Function Keys displayed at the bottom of your screen depend on the panel being viewed. PF1 is always Help and PF3 is always End, but the others change depending on the requirements of the panel, and sometimes End may not even appear.

2. **Message Line—**On this line, QMF tells you what was accomplished by the last operation you started, or what you can do next. Errors are also displayed here.

3. **Command Line—**If no function key starts the operation you want to do next, you can tell QMF what to do by typing a command on this line, after the arrow, and pressing **ENTER**. A list of the available QMF commands is provided in Section 5.9.

5.2 SQL Queries

5.2.1 Using SQL Queries

SQL is a simple but powerful query language. It does not provide specific prompts to direct your navigation, but when you learn its few basic rules for writing, you can discover how easily and quickly SQL works.

When using SQL you must know the following information:

- The name of the table you want the data from
- The names of the columns
- The row conditions you want to specify
- The sequence in which you want the data to appear (for example, ascending by name)

For some examples, we are using the LOAN table. All of the table names available in NSLDS are listed in Section 15.2.

5.2.2 Creating a SQL Query

Queries consist of four basic statements:

SELECT	Specifies the columns to select from the database (required).
FROM	Specifies the table(s) in which the columns exist (required).
WHERE	Specifies conditions each row must meet before being selected (optional).
ORDER BY	Specifies the order in which the data is sorted (optional).

SQL queries are English-like requests issued to the database manager to select the requested data for viewing and a formal report. The SQL query is typed on the *Query* panel in QMF.

- From the *QMF Home Panel,* press the **QUERY** key or type ***SHOW QUERY*** at the "Command" prompt. The *SQL Query* panel, where all queries are written, displays (Figure 5–6).

```
SQL QUERY                                                    LINE    1




*** END ***


1=Help       2=Run        3=End         4=          5=Chart       6=Draw
7=Backward   8=Forward    9=Form       10=Insert   11=Delete     12=Report
OK, QUERY is displayed.
 COMMAND ===>                                              SCROLL ===> PAGE
```

Figure 5–6, SQL Query Panel

- Press the **HOME** key to advance your cursor to the first query input position.

- Enter the desired ***SQL statements*** in the empty area between SQL QUERY and *** END ***. The statements typed here provide instructions to the database manager.

  You do not have to type each statement on a separate line. The examples in this appendix are displayed this way for clarity; but you can type straight across the panel or break a line between any two words. Use the **INSERT** and **DELETE** keys to insert or delete entire lines. You may also add extra spaces between words or before a line if desired. You can type the query in either uppercase or lowercase. The QMF profile is set to automatically translate input into uppercase.

- Press **ENTER** to toggle your cursor between the "Command" prompt and the top of the panel.

5.2.3 Format of SQL Queries

Many simple SQL queries use the following sequence:

SELECT	followed by a list of columns
FROM	followed by one or more table names
WHERE	followed by one or more conditions
ORDER BY	followed by a list of columns

5.2.4 Order by Selecting All Columns from a Table

You can select all of the columns in a table by typing an asterisk (*) after the SELECT statement. The columns display from left to right in the order in which they occur in the database table.

In Figure 5–7, the query entered is SELECT * FROM LOAN. Each statement in the SQL query is defined below.

```
       SQL QUERY                                              MODIFIED    LINE 1

       SELECT *
         FROM LOAN









       *** END ***


       1=Help       2=Run        3=End         4=Print     5=Chart       6=Draw
       7=Backward   8=Forward    9=Form       10=Insert   11=Delete     12=Report
       OK, cursor positioned.
       COMMAND ===>                                                 SCROLL ===>
PAGE
```

Figure 5–7, Select ALL Statement in SQL Query Panel

SELECT * This statement tells DB2 which columns you want to view. In this example, the wild card character * is used to select all columns in the LOAN table.

If you want to select specific columns and exclude others, use the SELECT statement followed by the names of the columns desired in the order (from left to right) you want them to be displayed in your report. Use commas (,) to separate the column names.

FROM LOAN This statement tells DB2 where the columns are located. This is not the best example because there are over 65 million loans in the NSLDS LOAN table. This query should not be used since it would report all of these loans. It is better to write a query that produces unique, meaningful results. Examples of these are described later.

5.2.5 Running a Query

When you have finished entering the query, you must enter the RUN command to process it.

5.2.5.1 Run Query

A command is a QMF instruction to perform an action. To process the query, type ***RUN*** or press the **RUN** key.

When you run a query, a special panel, the *Database Status Panel*, displays (Figure 5–8).

```
                    DATABASE STATUS PANEL

Your request is currently being processed by the Database Manager.

    The relative cost estimate for your request is: 19,465
```

Figure 5–8, Database Status Panel

5.2.5.2 Processing Times and Resource Limits

The cost estimate displayed on the *Database Status Panel* is an indicator of how hard the database manager has to work to process your request. The lowest cost estimate is '1'; however, you may issue requests which produce a higher estimate. These estimates are seldom precise. If you are expecting a few lines of output and your query takes more than a few minutes, call the CSC for assistance. If you are expecting many rows of output, and therefore, a long run, you should still contact the CSC for assistance to improve your query's efficiency. You may cancel a

query that is taking too long at any time. For more information on canceling queries, refer to Section 5.6.11.1, Interrupting a Query.

5.2.6 Viewing the Results of a Query: The Report

After running a query, you should see a *Report* panel similar to that shown in Figure 5–9.

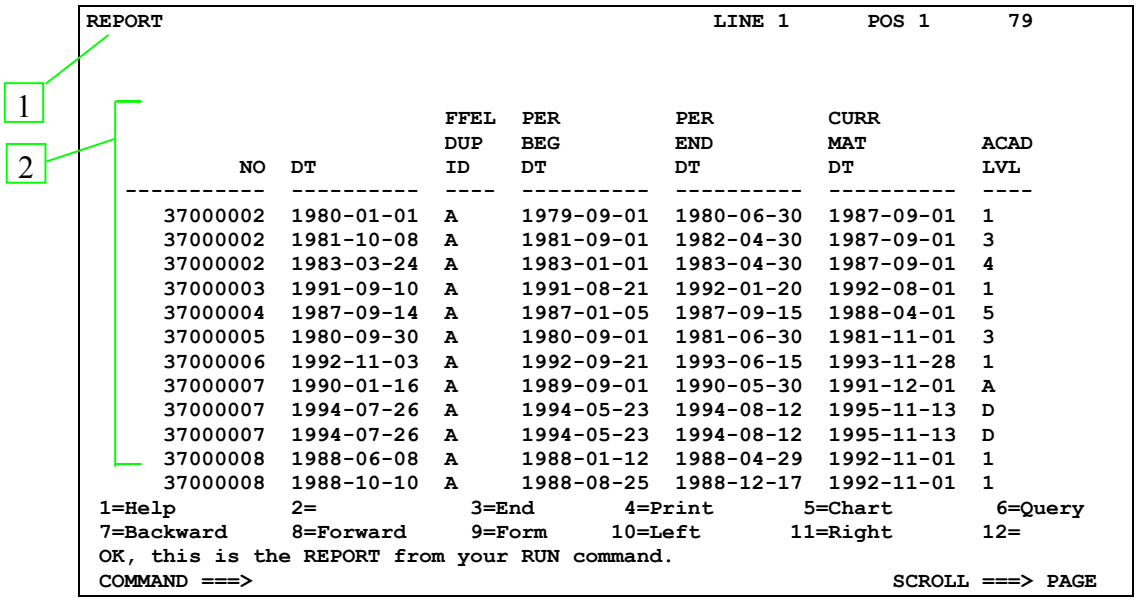


Figure 5–9, Report Panel

1. **Panel Title**—REPORT is the title of the panel that you see. Running a query that retrieves data from the database results in a report.

2. **Report Body**—Everything from the column headings immediately above the columns of data to *** END *** is considered the body of the report.

Because this is a lengthy report, all the data cannot be shown on one screen. To scroll in any direction, type the commands ***BACKWARD***, ***FORWARD, LEFT***, or ***RIGHT***; or press the corresponding function key. If you want to scroll directly to the top or bottom of your report, type ***TOP*** or ***BOTTOM,*** respectively, at the "Command" prompt, and press **ENTER**.

- Press the **FORWARD** key to view the rest of the report.

If *** END *** is still not displayed on your screen, press the **FORWARD** key or type ***FORWARD*** to view the remainder of the report (Figure 5–10).

```
REPORT                                          LINE 26080  POS 1      79

                          FFEL  PER          PER          CURR
                          DUP   BEG          END          MAT          ACAD
            NO  DT        ID    DT           DT           DT           LVL
   -----------  ----------  ----  ----------  ----------  ----------  ----
     717012672  1990-11-13  A     1990-08-27  1991-05-14  1995-07-01  1
     717012672  1992-02-07  A     1992-01-21  1992-05-11  1995-07-01  2
     717012672  1992-08-04  A     1992-08-31  1993-05-17  1995-07-01  2
     717012672  1993-08-30  A     1993-08-30  1994-05-16  1995-07-01  3
     717012673  1990-05-18  A     1990-01-15  1990-08-16  1991-12-01  1
     717012673  1990-07-23  A     1990-08-27  1991-05-14  1991-12-01  1
     717012674  1984-08-21  A     1984-08-01  1985-06-30  1986-03-01  4
     717012675  1989-06-05  A     1989-06-26  1989-08-18  1990-03-01  1
     717012675  1989-06-05  A     1989-06-26  1989-08-18  1989-06-08  1
     717012676  1981-10-30  A     1981-09-01  1982-05-31  1984-03-11  1
     777777777  1990-01-01  A     1993-05-17  1993-08-13  1993-06-07  B


*** END ***
1=Help         2=             3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward      9=Form     10=Left       11=Right       12=
OK, FORWARD performed. Please proceed.
 COMMAND ===>                                                SCROLL ===> PAGE
```

*Figure 5–10, Report Panel with ***END*** Displayed*

- Press the **QUERY** key to return to the SQL Query panel.

5.2.7 Using the RESET Command to Clear a Query

If a query displays on your current panel and you wish to clear it before beginning to write a new query, use the RESET QUERY command. This command erases the SQL statement on the current panel and displays a empty area for the new query to be constructed.

- Type ***RESET QUERY*** at the "Command" prompt.
- Press **ENTER.**

The query cleared from the panel cannot be recovered unless it was previously saved. To save a query, see Section 5.2.11, Saving a Query.

5.2.8 Using the DRAW Command to Provide Column Names

If you know the name of the table you want to work with but not all the column names, QMF can help by providing the column names for you. For example, suppose you want to know the names of the columns in the LOAN table:

- Type ***DRAW LOAN*** at the "Command" prompt.
- Press **ENTER**.

The DRAW command must be issued from a *SQL Query* panel. The DRAW command constructs a basic SQL SELECT query, selecting all columns from the database table. If you

were to run this query as it is, the entire LOAN table would be displayed. You may edit this query if desired by deleting column names or specifying select conditions. To clear the query from the panel:

- Type ***RESET QUERY.***
- Press **ENTER**.

The NSLDS tables and corresponding columns names are listed in Section 15.2.

5.2.9 Selecting Specific Columns from a Table

Most often, you do not need to view all columns in a table from your query. For this example, we are constructing a query to select the following columns from LOAN table:

AMT
CURR_LEN_CODE
SCH_CODE
STU_NO

Type the following query on the *SQL Query* panel:

```
SELECT    AMT, CURR_LEN_CODE, SCH_CODE, STU_NO
FROM      LOAN
```

Since the NSLDS LOAN table returns over 65 million rows of data, you can run the query to get a feel for the process, but should cancel it.

Your *SQL Query* panel should resemble Figure 5–11.

```
SQL QUERY                                          MODIFIED  LINE    1

 SELECT AMT, CURR_LEN_CODE, SCH_CODE, STU_NO
 FROM LOAN




 *** END ***



 1=Help       2=Run        3=End         4=          5=Chart       6=Draw
 7=Backward   8=Forward    9=Form       10=Insert   11=Delete     12=Report
 OK, QUERY is displayed.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–11, SELECT Statement in SQL Query Panel

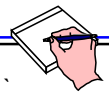
- Press the **RUN** key to process your query.

The report resulting from this query resembles the panel shown in Figure 5–12.

```
REPORT                                          LINE 1      POS 1      79



               CURR
               LEN      SCH              STU
            AMT CODE     CODE             NO
   ----------- ------  ------  -----------
          1250 899986  001526     37000002
          2500 899986  001526     37000002
          1338 899986  001526     37000002
          2625 819188  026112     37000003
          4000 899986  002199     37000004
          2500 821868  009377     37000005
          2625 888885  002199     37000006
          7500 899986  002838     37000007
          1703 819188  002838     37000007
           987 819188  002838     37000007
          2333 899986  003765     37000008
          1699 899986  003765     37000008
 1=Help         2=            3=End       4=Print       5=Chart        6=Query
 7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
  COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–12, Report Panel Showing Results of Select Statement

The BOTTOM command may take too long to process because of the size of the table. You should adjust this query for better results by using a WHERE statement to limit the rows selected.



Use the BOTTOM command to view the last rows in the report or *TOP* to return to the beginning of your report.

5.2.10 Selecting on Conditions

Often you may want to view a limited number of rows in a table. If you want to view only the loans with School Code 001002, use the WHERE statement followed by a condition.

There are two main data types stored in QMF columns:

1. **Character**—Can contain letters, numbers, or special characters (for example, SCH_CODE, CURR_FST).

2. **Numeric**—Contains numbers only; usually used in calculations (for example, AMT, OUT_PRIN_BAL).

To select numeric data, type the number you are searching for. To select rows with character data in a column, enclose the character data you are searching for with single quotation marks. SCH_CODE = '001002', in this example, expresses the condition of equality. Use the name of a column, then = (equals), followed by the value you are searching for in the column.

Advance your cursor into the query area and modify the statement as follows:

```
SELECT    AMT, CURR_LEN_CODE, SCH_CODE, STU_NO
  FROM    LOAN
WHERE     SCH_CODE = '001002'
```

As the examples progress, it uses additional columns from the LOAN table that were not displayed in Figure 16–2.

- Press the **RUN** key to produce the report in Figure 5–13.

```
REPORT                                          LINE 1      POS 1      79



              CURR
              LEN      SCH              STU
          AMT CODE     CODE             NO
   ----------- ------  ------  -----------
         2500 831053  001002     37001503
         1800 831053  001002     37001503
         2500 899986  001002    122001636
         2500 899986  001002    122001636
         1200 899986  001002    122002066
         2000 803634  001002    122002066
         1500 899986  001002    122002157
         7040 800001  001002    171717171
         7040 800001  001002    181818181
         7040 800004  001002    200000309
         7040 800001  001002    200000310
         7040 800004  001002    200000311
1=Help          2=            3=End       4=Print       5=Chart        6=Query
7=Backward      8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–13, Sorted Report Panel

The example above displays all rows where the value in SCH_CODE equals 001002. If only one row satisfies the condition, you see only one row. If there are no rows in the table that satisfy the condition, you see a *Report* panel with column headings, but no rows of data are displayed.

5.2.11 Saving a Query

QMF allows you to save a query for later use. A copy of your query is not kept unless you save it. If a query is changed, the former query is lost unless you saved it.

Queries can be stored in the database with specific names. If you have created a query and want to save it for later, use the following procedure:

- Type ***SAVE QUERY ?*** at the "Command" prompt.
- Press **ENTER**.

The *Save Command Prompt* panel displays (Figure 5–14).

```
                    SAVE Command Prompt
                                                          1 to 13 of 13

SAVE QUERY
AS
Name     ( ____________________________________________________ ) +
         Enter the name the object will have in the database.

Confirm ( YES_____ )  Display the confirmation panel before replacing
                      and object in the database?     YES or NO.

Share    ( _________ ) Share this object?  YES or NO.  Leave this field
                       blank to keep the existing share value.

Comment ( ____________________________________________________ )
         You can enter a comment to be saved with the object.

_____________________________________________________________________________
 F1 = Help       F3=End       F4=List       F7=Backward       F8=Forward
```

Figure 5–14, Save Command Prompt Panel

The first blank is for the query name. This is the name that you use to recall the query.

- Type your ***queryname*** on the blank line after the "Name" prompt.

5.2.12 Naming Conventions

Use the following rules when naming your query:

- Names can be up to 18 characters.
- Names may contain only letters of the alphabet, numbers, and the characters @, #, $, and underscore (_).
- Names must begin with a letter, @, #, or $.

5.2.12.1 Naming Standards

The naming standard is ***X_name***, where:

X = Type of Object:

Q—Query
F—Form
P—PROC

name = Purpose of the object.

The following are examples of query names that conform to this naming standard:

Q_DEFAULT_RATE_SUP
Q_CLOSED_SCHOOLS
Q_COR_LEN_BY_SCH

Later, when you program special forms to present the results of your query, giving the form the same name as the query helps you know which form is which. The same applies to procedures.

5.2.12.2 Query Options

As you save your query, QMF offers you the following options:

- **CONFIRM**—This option asks whether you want to be notified before an existing query is replaced by a new query with the same name. The default is YES. If the option is set to YES, a *Confirmation* panel displays before any query is replaced in the database. This allows you the opportunity to cancel the ***SAVE*** before accidentally replacing an existing query. If the option is set to NO, a *Confirmation* panel is not displayed. The existing query is automatically replaced by the new query with the same name.

- **SHARE**—You can save a query to share with other users by using the SHARE option after the SAVE command. The SHARE option controls QMF users' access to a query. This access is independent of whether or not those users have authority to access the data that the saved query retrieves. That is, users can be authorized to access a query, yet receive an error message when they run the query if they are not authorized to see the data. We recommend all queries be saved with SHARE = YES. Once a query has been saved with the SHARE option set to YES, other users may display the query by referring to it by owner. Owner is the userid of whoever saved and shared the query. Queryname is the name the query was assigned when it was saved.

Type ***YES*** on the blank line beside the "Share" prompt.

- **COMMENT**—You can assign remarks to the query by typing text at the last prompt. This option allows you to document information concerning each query at save. Adding comments makes it easier to recognize the purpose and function of a query. To add a comment, follow these steps:

  – Type ***EXAMPLE FOR QMF CLASS*** at the "Comment" prompt.
  – Press **ENTER**.

Notice a message verifying the query has been saved is displayed on the message line. You do not have to display the *SQL Query* panel to save your query. It can be saved from any panel with a "Command" prompt. You can type the command ***SAVE QUERY AS queryname (SHARE=YES*** or ***(S=Y*** from any "Command" prompt. This command does not display the *SQL Query* panel, but simply saves the query in the database with the name you have assigned, with the Share Option set to YES.

5.2.13 RUN Command

Once a query has been saved, you do not have to display the query on the *SQL Query* panel to run it. The RUN command allows you to run a saved query from the "Command" prompt on any QMF panel.

- Press the **END** key to return to the *QMF Home Panel.*

To run a previously saved query:

- Type ***RUN*** followed by your saved ***queryname*** at the "Command" prompt.
- Press **ENTER**.

This command runs the query selected and returns the results to a *Report* panel.

5.2.14 Adding Comments to a SQL Query

Comments are lines of text entered in your query that do not provide instructions to the database manager. Instead, they explain your query so that you or someone else using the query later may more easily understand it. Comments are entered from the *SQL Query* panel.

In SQL, two hyphens (--) mark everything that follows them, up to the end of the line, as a comment. With comments, your query might look like the screen in Figure 5–15.

```
-- THIS QUERY LISTS AMT, CURRENT LENDER CODE, SCHOOL CODE, STUDENT NUMBER

SELECT AMT, CURR_LEN_CODE, SCH_CODE, STU_NO                -- NAMES THE COLUMNS USED
  FROM LOAN                                                -- THE TABLE
  WHERE SCH_CODE = '001002'                                -- THE CONDITION TO MEET
  ORDER BY CURR_LEN_CODE                                   -- ALPHABETIC ORDER BY NAME
```

Figure 5–15, Query with Comments

5.2.15 Displaying the Names of Your Saved Queries

If you want to view a list of queries you have saved, use the following procedure:

- Type ***LIST QUERIES*** at the "Command" prompt.
- Press **ENTER**.

The *Query List* panel displays over whatever was on your current panel before you entered the LIST command. Figure 5–16 shows how a query named SC001002_Q has been saved by QMFUSER. If QMFUSER had saved other queries, they would also be listed here.

```
_____________________________________________________________________________
|                              Query List                                    |
|                                                                            |
| Action   Name               Owner                                          |
|                                                          1 to 1 of 1       |
|               SC001002_Q      QMFUSER                                      |
|                                                                            |
|                                                                            |
|----------------------------------------------------------------------------|
| F1=Help  F4=Command  F5=Describe  F6=Refresh  F7=Backward  F8=Forward      |
| F9=Clear  F10=Comments  F11=Sort  F12=Cancel                               |
|____________________________________________________________________________|


OK, your database object list is displayed.
```

Figure 5–16, Query List Panel

- Press the **CANCEL** key to return to the previous panel.

From *Query List* panel, you may enter a command in the ACTION column. Commands entered here include RUN, DISPLAY, and ERASE.

5.2.16 Erasing a Query

QMF lets you erase any query you have saved in the database. For example, to erase the query SC001002_Q, use the following procedure:

- Type ***ERASE SC001002_Q*** at the "Command" prompt.

An erase confirmation message is displayed. This allows you to cancel the ***ERASE*** before it actually processes.

- Press **ENTER** to erase the query, or type ***2*** to cancel.

Be careful when using the ERASE command, because once a query has been erased, it cannot be retrieved.

You can erase the query when using the LIST QUERIES command by typing *ERASE* in the ACTION column beside the query you want to erase.

5.2.17 Retrieving and Displaying a Saved Query

Sometimes you may need to retrieve a saved query from the database for viewing. Suppose you wanted to view the query BASIC_Q previously saved and shared by your userid. To display that saved query, BASIC_Q, from the database, use the following procedure:

- Type ***DISPLAY BASIC_Q*** at the "Command" prompt.
- Press **ENTER**.

The saved query is displayed (Figure 5–17).

```
SQL QUERY                                              MODIFIED  LINE    1

SELECT CURR_MAT_DT,CURR_LOAN_STAT,AMT,OUT_PRIN_BAL,OUT_PRIN_BAL_DT,
  OUT_INT_BAL, OUT_INT_BAL_DT,CURR_GA_CODE,CURR_LEN_CODE,SCH_CODE,STU_NO
FROM LOAN









*** END ***


1=Help       2=Run        3=End         4=          5=Chart       6=Draw
7=Backward   8=Forward    9=Form       10=Insert   11=Delete     12=Report
OK,      .BASIC_Q is displayed.
 COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–17, SQL Query Panel Showing a Saved Query

Any query you were working on is automatically erased from the *SQL Query* panel and replaced with the retrieved, saved query. To avoid losing your work, make sure you save any query you

are working on before using the DISPLAY command. When your saved query is displayed, you are free to modify or run it.

5.2.18 Selecting on Inequalities

So far, our examples have used only equal (=) comparisons when specifying conditions for retrieving rows; for example, WHERE CURR_LEN_CODE = '899986'. SQL queries use several other comparison operators. They are discussed below.

The WHERE statement must always be followed by a column name. The column name must be followed by either an equals sign (=) or one of the following comparison operators:

>	greater than
<	less than
< >	not equal to (less than combined with greater than)
> =	greater than or equal to
< =	less than or equal to

Other WHERE statements are shown in a table in Section 5.3.7.

Comparison operators in an SQL statement are always followed by a value. For example, if the following query were run, all loans with an amount of more than $1,000 would be selected for the report. Any loan with an amount equal to $1,000 would not be displayed on the report.

```
SELECT    CURR_MAT_DT, CURR_LOAN_STAT, AMT,
          OUT_PRIN_BAL, OUT_PRIN_BAL_DT, OUT_INT_BAL,
          OUT_INT_BAL_DT, CURR_GA_CODE, CURR_LEN_CODE,
          SCH_CODE, STU_NO
  FROM    LOAN
WHERE     AMT > 1000
```

This query produces the report shown in Figure 5–18.

```
REPORT                                            LINE 1      POS 1       79



                                                        OUT                      OUT
  CURR        CURR                               OUT    PRIN                OUT  INT
  MAT         LOAN                               PRIN   BAL                 INT  BAL
  DT          STAT          AMT                  BAL    DT                  BAL  DT
  ----------  ----  -----------  -----------  ----------  -----------  --------
  1987-09-01  PF           1250            0  0001-01-01            0  0001-01-
  1987-09-01  PF           2500            0  0001-01-01            0  0001-01-
  1987-09-01  PF           1338            0  0001-01-01            0  0001-01-
  1992-08-01  CA           2625            0  0001-01-01            0  0001-01-
  1988-04-01  DU           4000            0  0001-01-01            0  0001-01-
  1981-11-01  DC           2500            0  0001-01-01            0  0001-01-
  1993-11-28  RP           2625            0  0001-01-01            0  0001-01-
  1991-12-01  RP           7500            0  0001-01-01            0  0001-01-
  1995-11-13  ID           1703            0  0001-01-01            0  0001-01-
  1992-11-01  RP           2333            0  0001-01-01            0  0001-01-
  1992-11-01  RP           1699            0  0001-01-01            0  0001-01-
1=Help         2=           3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward    9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–18, Report Panel Listing Amounts Over 1000

5.2.19 Selecting a Range

When you want to select a range of data, use the BETWEEN comparison operator. The BETWEEN command selects all data equal to or between the two terminal values you choose For example, if you ran the following query:

```
SELECT   CURR_MAT_DT, CURR_LOAN_STAT, AMT,
         OUT_PRIN_BAL, OUT_PRIN_BAL_DT, OUT_INT_BAL,
         OUT_INT_BAL_DT, CURR_GA_CODE, CURR_LEN_CODE,
         SCH_CODE, STU_NO
  FROM   LOAN
 WHERE   AMT BETWEEN 1000 and 2000
```

All loans in the LOAN table with an amount of $1,000 or $2,000 or any amount in between would be selected for the resulting report.

Amount is a numeric column so you do not need to enclose the numbers in single quotes. Numeric columns cannot contain dollar signs ($) or commas, so do not include this character in your WHERE statement.

- Press the **RUN** key. The report shown in Figure 5–19 displays.

```
REPORT                                          LINE 1      POS 1      79



                                                  OUT                      OUT
   CURR        CURR                         OUT   PRIN               OUT   INT
   MAT         LOAN                         PRIN  BAL                INT   BAL
    DT         STAT             AMT         BAL    DT                BAL   DT
   ----------  ----  -----------  -----------  ----------  -----------  --------
   1987-09-01  PF           1250            0  0001-01-01            0  0001-01-
   1987-09-01  PF           1338            0  0001-01-01            0  0001-01-
   1995-11-13  ID           1703            0  0001-01-01            0  0001-01-
   1992-11-01  RP           1699            0  0001-01-01            0  0001-01-
   1992-11-01  RP           1699            0  0001-01-01            0  0001-01-
   1992-11-01  RP           1769            0  0001-01-01            0  0001-01-
   1988-12-01  PF           1000            0  0001-01-01            0  0001-01-
   1996-11-30  ID           2000            0  0001-01-01            0  0001-01-
   1984-11-15  PF           2000            0  0001-01-01            0  0001-01-
   1984-02-15  PF           2000            0  0001-01-01            0  0001-01-
   1984-02-15  PF           2000            0  0001-01-01            0  0001-01-
 1=Help        2=            3=End       4=Print       5=Chart        6=Query
 7=Backward    8=Forward     9=Form      10=Left       11=Right       12=
 OK, this is the REPORT from your RUN command.
  COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–19, Report Panel Listing Amounts Between 1000 and 2000

5.2.20 Selecting on Multiple Conditions

Multiple conditions are connected by AND or OR.

5.2.20.1 AND Condition

Assume we have two different conditions:

AMT BETWEEN 1000 AND 2000
CURR_LEN_CODE = '899986'

When you want to select rows that meet both conditions, use the AND condition to select only the rows that meet both conditions. For example, if the following query were run:

```
SELECT    CURR_MAT_DT, CURR_LOAN_STAT, AMT,
          OUT_PRIN_BAL, OUT_PRIN_BAL_DT, OUT_INT_BAL,
          OUT_INT_BAL_DT, CURR_GA_CODE, CURR_LEN_CODE,
          SCH_CODE, STU_NO
  FROM    LOAN
 WHERE    AMT BETWEEN 1000 and 2000
   AND    CURR_LEN_CODE = '899986'
```

The query would select all loans in the LOAN table with both an amount between $1,000 and $2,000 and also a Lender Code of 899986.

- Press the **RUN** key. The report in Figure 5–20 displays.

```
REPORT                                                LINE 1      POS 1       79



                                                   OUT                       OUT
   CURR        CURR                          OUT   PRIN                OUT   INT
   MAT         LOAN                          PRIN  BAL                 INT   BAL
    DT         STAT          AMT             BAL    DT                 BAL   DT
   ----------  ----  -----------  -----------  ----------  -----------  --------
   1987-09-01  PF           1250            0  0001-01-01            0  0001-01-
   1987-09-01  PF           1338            0  0001-01-01            0  0001-01-
   1992-11-01  RP           1699            0  0001-01-01            0  0001-01-
   1992-11-01  RP           1699            0  0001-01-01            0  0001-01-
   1993-05-01  RP           1575            0  0001-01-01            0  0001-01-
   1990-05-01  RP           1850            0  0001-01-01            0  0001-01-
   1990-07-01  RP           1572            0  0001-01-01            0  0001-01-
   1984-02-15  PF           1764            0  0001-01-01            0  0001-01-
   1984-02-15  PF           1550            0  0001-01-01            0  0001-01-
   1984-02-15  PF           2000            0  0001-01-01            0  0001-01-
   1993-02-01  PF           1813            0  0001-01-01            0  0001-01-
 1=Help         2=           3=End       4=Print       5=Chart        6=Query
 7=Backward     8=Forward    9=Form     10=Left       11=Right       12=
 OK, this is the REPORT from your RUN command.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–20, Report Panel

Remember to use the RIGHT and LEFT function keys to scroll to the right and left as demonstrated in Figure 5–21.

```
REPORT                                                LINE 1      POS 38      116



         OUT                        OUT
    OUT  PRIN                  OUT  INT          CURR  CURR
   PRIN  BAL                   INT  BAL           GA   LEN     SCH             STU
    BAL   DT                   BAL  DT           CODE  CODE    CODE             NO
 -------  ----------  -----------  ----------  ----  ------  ------  -----------
       0  0001-01-01            0  0001-01-01  748   899986  001526     37000002
       0  0001-01-01            0  0001-01-01  748   899986  001526     37000002
       0  0001-01-01            0  0001-01-01  748   899986  003765     37000008
       0  0001-01-01            0  0001-01-01  748   899986  003765     37000008
       0  0001-01-01            0  0001-01-01  748   899986  002708     37000043
       0  0001-01-01            0  0001-01-01  748   899986  002708     37000043
       0  0001-01-01            0  0001-01-01  748   899986  003946     37000114
       0  0001-01-01            0  0001-01-01  748   899986  003290     37000180
       0  0001-01-01            0  0001-01-01  748   899986  003290     37000180
       0  0001-01-01            0  0001-01-01  748   899986  003290     37000180
       0  0001-01-01            0  0001-01-01  748   899986  023241     37000207
 1=Help         2=           3=End       4=Print       5=Chart        6=Query
 7=Backward     8=Forward    9=Form     10=Left       11=Right       12=
 OK, RIGHT performed. Please proceed.
  COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–21, Report Panel Listing Current Lender Code of 899986

Notice that in Figure 5–21 the only Lender Code displayed is 899986. Sometimes, it is possible to use an AND condition instead of BETWEEN. For example, WHERE AMT >= 1000 AND AMT <= 2000 would achieve the same result as WHERE AMT BETWEEN 1000 AND 2000.

5.2.20.2 OR Condition

Assume we have the same two conditions used with the AND condition. This time, rather than selecting only the records meeting both conditions (AND), you want to select all records meeting either or both conditions. If you want to select rows that meet either or both conditions, use the OR condition to connect them. For example, if the following query were run:

```
SELECT   CURR_MAT_DT, CURR_LOAN_STAT, AMT,
         OUT_PRIN_BAL, OUT_PRIN_BAL_DT, OUT_INT_BAL,
         OUT_INT_BAL_DT, CURR_GA_CODE, CURR_LEN_CODE,
         SCH_CODE, STU_NO
  FROM   LOAN
 WHERE   AMT BETWEEN 1000 and 2000
    OR   CURR_LEN_CODE = '899986'
```

The query would select the same columns as the one using the AND condition, but would include only those with either an amount between $1,000 and $2,000 or a Lender Code of 899986. The report shown in Figure 5–22 displays.

```
REPORT                                          LINE 1      POS 1      79


                                                  OUT                       OUT
   CURR        CURR                         OUT   PRIN                OUT   INT
   MAT         LOAN                         PRIN  BAL                 INT   BAL
    DT         STAT          AMT            BAL    DT                 BAL   DT
   ----------  ----  -----------  -----------  ----------  -----------  --------
   1987-09-01  PF           1250            0  0001-01-01            0  0001-01-
   1987-09-01  PF           2500            0  0001-01-01            0  0001-01-
   1987-09-01  PF           1338            0  0001-01-01            0  0001-01-
   1988-04-01  DU           4000            0  0001-01-01            0  0001-01-
   1991-12-01  RP           7500            0  0001-01-01            0  0001-01-
   1995-11-13  ID           1703            0  0001-01-01            0  0001-01-
   1992-11-01  RP           2333            0  0001-01-01            0  0001-01-
   1992-11-01  RP           1699            0  0001-01-01            0  0001-01-
   1992-11-01  RP           1699            0  0001-01-01            0  0001-01-
   1992-11-01  RP           2625            0  0001-01-01            0  0001-01-
   1992-11-01  RP           1769            0  0001-01-01            0  0001-01-
 1=Help        2=           3=End       4=Print       5=Chart        6=Query
 7=Backward    8=Forward    9=Form     10=Left       11=Right       12=
 OK, this is the REPORT from your RUN command.
  COMMAND ===>                                                  SCROLL ===> PAGE
```

Figure 5–22, Report Panel Displaying Results of the OR Condition

All loans for Lender Code of 899986 are selected regardless of their amount. All loans that have an amount between $1,000 and $2,000 are selected regardless of the Lender Code.

- Press the **RIGHT KEY** to display the CUR LEN CODE column.

Multiple OR conditions can be used in the WHERE statement:

WHERE CURR_LEN_CODE = '899986' OR CURR_LEN_CODE = '800241'

This WHERE statement selects all loans for either Lender code 899986 or 800241.

5.2.20.3 IN Condition

When searching for an equal condition in one column, it is sometimes easier to use the IN condition instead of multiple OR conditions in your query. For example, instead of:

```
SELECT    CURR_MAT_DT, CURR_LOAN_STAT, AMT,
          OUT_PRIN_BAL, OUT_PRIN_BAL_DT, OUT_INT_BAL,
          OUT_INT_BAL_DT, CURR_GA_CODE, CURR_LEN_CODE,
          SCH_CODE, STU_NO
  FROM    LOAN
WHERE     CURR_LEN_CODE = '899986' OR CURR_LEN_CODE = '800241'
```

use the following query:

```
SELECT    CURR_MAT_DT, CURR_LOAN_STAT, AMT,
          OUT_PRIN_BAL, OUT_PRIN_BAL_DT, OUT_INT_BAL,
          OUT_INT_BAL_DT, CURR_GA_CODE, CURR_LEN_CODE,
          SCH_CODE, STU_NO
  FROM    LOAN
WHERE     CURR_LEN_CODE IN ('899986', '800241')
```

- Press the **RUN** key to produce the report.
- Press the **RIGHT** key to display SCH CODE column (Figure 5–23).

```
REPORT                                          LINE 1      POS 38     116



        OUT                      OUT
   OUT  PRIN                OUT  INT          CURR  CURR
   PRIN BAL                 INT  BAL           GA   LEN     SCH             STU
   BAL   DT                 BAL  DT           CODE  CODE    CODE            NO
-------  ----------  -----------  ----------  ----  ------  ------  -----------
      0  0001-01-01            0  0001-01-01  748   899986  001526     37000002
      0  0001-01-01            0  0001-01-01  748   899986  001526     37000002
      0  0001-01-01            0  0001-01-01  748   899986  001526     37000002
      0  0001-01-01            0  0001-01-01  748   899986  002199     37000004
      0  0001-01-01            0  0001-01-01  748   899986  002838     37000007
      0  0001-01-01            0  0001-01-01  748   899986  003765     37000008
      0  0001-01-01            0  0001-01-01  748   899986  003765     37000008
      0  0001-01-01            0  0001-01-01  748   899986  003765     37000008
      0  0001-01-01            0  0001-01-01  748   899986  003765     37000008
      0  0001-01-01            0  0001-01-01  748   899986  002083     37000009
      0  0001-01-01            0  0001-01-01  748   899986  002218     37000010
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, RIGHT performed. Please proceed.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–23, Report Panel Listing Results of the IN Condition

All loans for lender 899986 and 800241 are selected for the report. When the IN condition is used, values are specified in parentheses. One or more values can be specified; for example, the query WHERE CURR_LEN_CODE IN (‘899986’) only selects lender 899986 loans.

Remember, if you are selecting from a character type column, each condition you are searching for must be enclosed in single quotes.

5.2.21 Putting the Rows in Order

To arrange your output by specific columns, use the ORDER BY statement followed by the names of the columns that control the order. Enter the most significant column name first. If the ORDER BY statement is excluded from the query, the data is displayed in the order in which it was retrieved from DB2.

The rows of the report automatically are displayed in ascending order in the column name specified in the ORDER BY statement. Ascending order is the default. If you want the rows displayed in descending order:

- Type ***ORDER BY COLUMN_NAME DESC***.

An example of ascending order is “A, B, C, D” or “0, 1, 2, 3”, and descending order “3, 2, 1, 0” or “D, C, B, A”. If both letters and numbers are sorted within a column, letters precede numbers when sorted in ascending order, and follow numbers when sorted in descending order. For example, consider the following query:

```
SELECT    CURR_MAT_DT, CURR_LOAN_STAT, AMT, OUT_PRIN_BAL,
          OUT_PRIN_BAL_DT, OUT_INT_BAL, OUT_INT_BAL_DT,
          CURR_LEN_CODE, SCH_CODE, STU_NO
  FROM    LOAN
 WHERE    CURR_LEN_CODE IN (‘899986’, ‘800241’)
ORDER BY  SCH_CODE
```

- Press the **RUN** key to produce the report (Figure 5–24).
- Press the **RIGHT** key to scroll to display the SCH CODE column.

```
REPORT                                      LINE 1      POS 1      79



                                          OUT                      OUT
  CURR        CURR                   OUT  PRIN                OUT  INT
  MAT         LOAN                   PRIN BAL                 INT  BAL
  DT          STAT           AMT     BAL  DT                  BAL  DT
  ----------  ----  -----------  -----------  ----------  -----------  --------
  1988-07-01  RP            2500           0  0001-01-01            0  0001-01-
  1990-12-01  RP            1200           0  0001-01-01            0  0001-01-
  1988-07-01  RP            2500           0  0001-01-01            0  0001-01-
  1989-11-01  PF            1500           0  0001-01-01            0  0001-01-
  1987-12-01  PF            2500           0  0001-01-01            0  0001-01-
  1988-01-01  PF            2500           0  0001-01-01            0  0001-01-
  1988-06-01  PF            2500           0  0001-01-01            0  0001-01-
  1990-11-01  PF            2500           0  0001-01-01            0  0001-01-
  1990-11-01  PF            1464           0  0001-01-01            0  0001-01-
  1992-11-01  RP            1479           0  0001-01-01            0  0001-01-
  1992-11-01  RP            1147           0  0001-01-01            0  0001-01-
1=Help       2=           3=End       4=Print       5=Chart        6=Query
7=Backward   8=Forward    9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
 COMMAND ===>                                             SCROLL ===> PAGE
```

Figure 5–24, Report Panel Listing School Codes in Ascending Order

This query would select all loans with Current Lender 899986 or 800241. Notice that the loans are displayed in ascending order by School Code. Ascending or descending was not specified in the ORDER BY statement, so the default, ascending, was assumed.

Suppose you want the highest School Code to display at the top of the report. To arrange this, you must specify the order as descending (DESC). For example, if the following query were run:

```
   SELECT   CURR_MAT_DT, CURR_LOAN_STAT, AMT, OUT_PRIN_BAL,
            OUT_PRIN_BAL_DT, OUT_INT_BAL, OUT_INT_BAL_DT,
            CURR_LEN_CODE, SCH_CODE, STU_NO
     FROM   LOAN
    WHERE   CURR_LEN_CODE IN ('899986', '800241')
 ORDER BY   SCH_CODE DESC
```

The same loans would be displayed as in the previous query, except in descending order.

To change the query so each School Code is displayed in ascending order within each Lender code, change the query as follows:

```
   SELECT   CURR_MAT_DT, CURR_LOAN_STAT, AMT,
            OUT_PRIN_BAL, OUT_PRIN_BAL_DT, OUT_INT_BAL,
            OUT_INT_BAL_DT, CURR_GA_CODE, CURR_LEN_CODE,
            SCH_CODE, STU_NO
     FROM   LOAN
    WHERE   CURR_LEN_CODE IN ('899986', '800241')
 ORDER BY   CURR_LEN_CODE, SCH_CODE
```

- Press the **RUN** key to produce the report.

- Press the **RIGHT** key to display the CURR LEN and SCH CODE columns (Figure 5–25).

```
REPORT                                           LINE 1      POS 38     116



          OUT                       OUT
     OUT  PRIN                 OUT  INT         CURR  CURR
    PRIN  BAL                  INT  BAL          GA   LEN     SCH                STU
     BAL  DT                   BAL  DT          CODE  CODE    CODE                NO
 -------  ----------  -----------  ----------  ----  ------  ------  -----------
       0  0001-01-01            0  0001-01-01  725   800241  001610    547009751
       0  0001-01-01            0  0001-01-01  725   800241  001610    547009986
       0  0001-01-01            0  0001-01-01  718   800241  020988    207003783
       0  0001-01-01            0  0001-01-01  740   899986  001002    122001636
       0  0001-01-01            0  0001-01-01  741   899986  001002    122002066
       0  0001-01-01            0  0001-01-01  741   899986  001002    122002157
       0  0001-01-01            0  0001-01-01  740   899986  001002    122001636
       0  0001-01-01            0  0001-01-01  748   899986  001005     37000481
       0  0001-01-01            0  0001-01-01  748   899986  001005     37000483
       0  0001-01-01            0  0001-01-01  748   899986  001005     37000503
       0  0001-01-01            0  0001-01-01  741   899986  001005    122002040
 1=Help         2=           3=End        4=Print       5=Chart        6=Query
 7=Backward     8=Forward    9=Form      10=Left       11=Right       12=
 OK, RIGHT performed. Please proceed.
  COMMAND ===>                                                   SCROLL ===> PAGE
```

Figure 5–25, Report Panel Listing Results of Order by Statement

In this example, loans are displayed in ascending order first by CURR_LEN_CODE, and then by SCH_CODE within each lender grouping. The first column that follows the ORDER BY statement is used as the primary sort column for all rows retrieved. The second and succeeding columns are used to sort to finer levels of detail.

5.3 Prompted Query

Prompted Query provides an easy way to create and run a query. It helps you access and select information from a database. Prompted Query is especially useful for the beginner or occasional QMF user because it prompts you step-by-step while building a query. Therefore, while you do not need to have detailed knowledge of a query language, you do need to know which tables contain the data you want in order to build an effective query.

5.3.1 Getting Started with Prompted Query

To use Prompted Query, first set the LANGUAGE option in your profile to PROMPTED as described in Section 5.3.1.2. When you have accessed QMF, the *QMF Home Panel* displays (Figure 5–26).

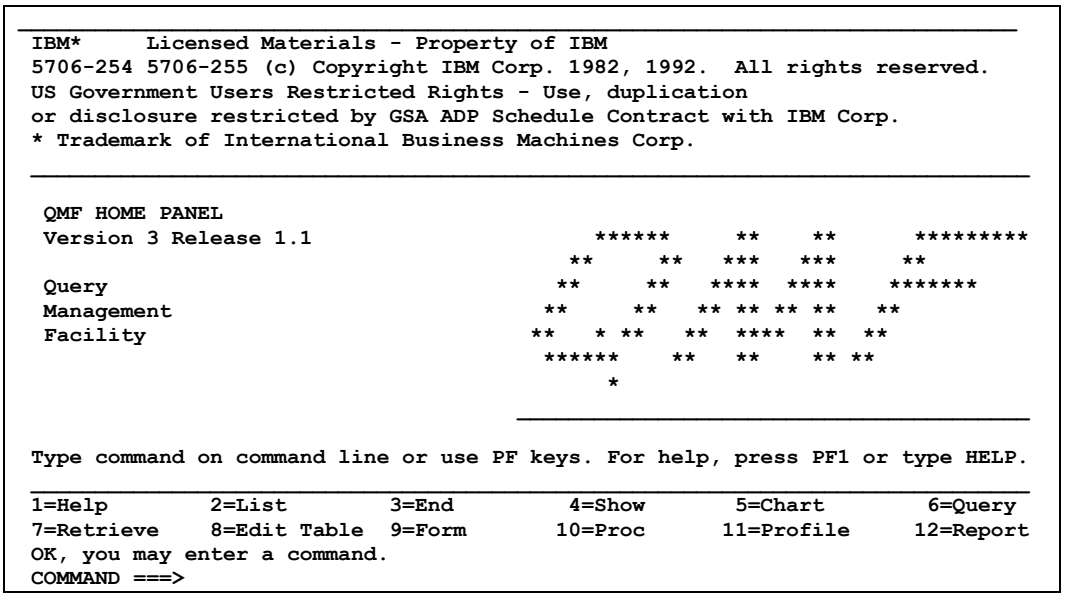


Figure 5–26, QMF Home Panel

5.3.1.1 Using the SHOW Command

Use the SHOW command to move among the different panels that QMF uses in building a query and formatting the results of that query. These panels are known as object panels. To access the *Show Command Prompt* panel, use the following procedure:

- Type ***SHOW*** at the "Command" prompt.
- Press **ENTER**.

The *Show Command Prompt* panel displays (Figure 5–27). This panel lists object panels that can be accessed using the SHOW command.

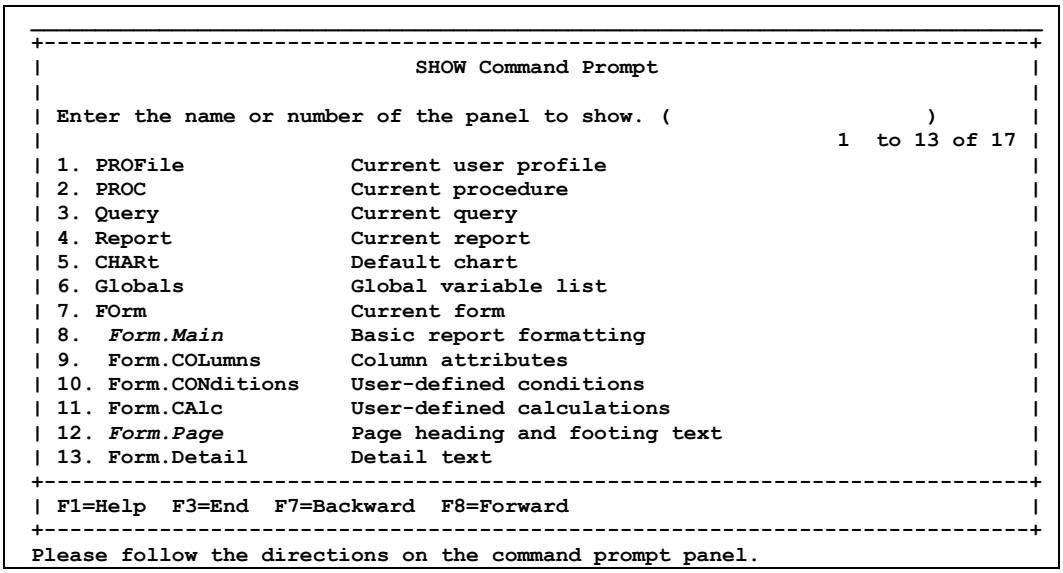


Figure 5–27, Show Command Prompt Panel

- Type ***PROFILE*** or ***1***, the name or number of the desired panel.
- Press **ENTER**.

You can also display the user profile by pressing the **PROFILE** key from the *QMF Home Panel* or by typing the command ***Display PROFILE*** or shortcut ***DI PROFILE*** on the command line from any QMF panel.

5.3.1.2 Setting the Profile Values

After selecting the PROFILE option from the *SHOW Command Prompt* panel, you should see your profile data (Figure 5–28). It describes your interactive environment with QMF and is kept in the database by QMF. Your profile tells QMF what choices to make when presenting information for viewing or printing. For an online explanation of Profile options, press the **HELP** key.

```
PROFILE

General Operands:
  CASE     ===> UPPER    Enter UPPER, STRING, or MIXED.
  DECIMAL  ===> PERIOD   Enter PERIOD, COMMA, or FRENCH.
  CONFIRM  ===> YES      Enter YES or NO.
  LANGUAGE ===> PROMPTED Enter SQL, QBE, or PROMPTED.
  MODEL    ===> REL      Enter REL or ER.
Defaults for printing:
  WIDTH    ===> 132      Number of characters per line.
  LENGTH   ===> 60       Number of lines per page.
  PRINTER  ===>          Printer to be used for output.

QMF Administration Operands:  (Not usually changed)
SPACE    ===> "DSQTSDEF"
Enter the name of SQL/DS DBSPACE in which tables will
be saved by the SAVE DATA command.
TRACE    ===> NONE
Enter ALL, NONE or a character string of function-id,
trace-level pairs.
1=Help         2=Save        3=End       4=Print       5=Chart     6=Query
7=             8=            9=Form     10=           11=         12=Report
OK, PROFILE is shown.
 COMMAND ===>
```

Figure 5–28, QMF Profile

- **CASE ==> UPPER**
  QMF recognizes commands only in uppercase characters. When CASE==>UPPER is set, QMF changes data entered in lowercase to uppercase.

- **DECIMAL ==> PERIOD**
  A period (.) is the most common decimal point indicator. Other indicators are available, one example being a comma.

- **CONFIRM ==> YES**
  When YES is selected, QMF displays a confirmation panel before a command changes or replaces an object in the database. We recommend this option be set to YES to prevent accidentally overwriting something.

- **LANGUAGE ==> SQL**
  QMF provides three ways to write queries:

  1. Structured Query Language (SQL)
  2. Prompted Query (Prompted)
  3. Query-by-Example (QBE)

  Prompted Query builds a retrieval query by prompting you for information about the data you want. SQL and QBE are languages for writing queries.

  The choice specified in the profile determines whether an *SQL*, *QBE*, or *Prompted Query* panel displays when you create or display a query. To create queries using the *Prompted Query* panel, follow these steps:

1. Press **TAB** to advance the cursor to the LANGUAGE option.
2. Type ***prompted***.
3. Press **ENTER**.

- **MODEL ==> REL**
  QMF can work with two types of data: relational (REL) and entity-relationship (ER) data. NSLDS uses relational data stored in DB2. This option should never be changed.

The options PRINTER, SPACE, and TRACE should never be changed without first checking with the Customer Service Center.

5.3.1.3 Saving Your Profile

The changes you made to your profile remain in effect only until you end your QMF session, unless you save the changed profile.

To save your changed profile:

- Press the **SAVE** key (PF2).
- Press the **END** key (PF3) to return to the *QMF Home Panel*.

The profile you saved is stored in the database. It is in effect when you next log on to QMF. If you want the changes to take effect immediately, end your QMF session and start a new one.

5.3.2 Creating a Prompted Query

A prompted query (Figure 5–29) provides menus that prompt you to create queries. To create queries, you must know the tables you want data from, the names of columns within the table, row conditions, and the sequence in which you want to display the rows. In other words, the same information you needed for an SQL query.

The dialog panels of Prompted Query guide you through listing tables, getting information about the tables, selecting tables and columns, and building row conditions without your having to know the syntax of an SQL query.

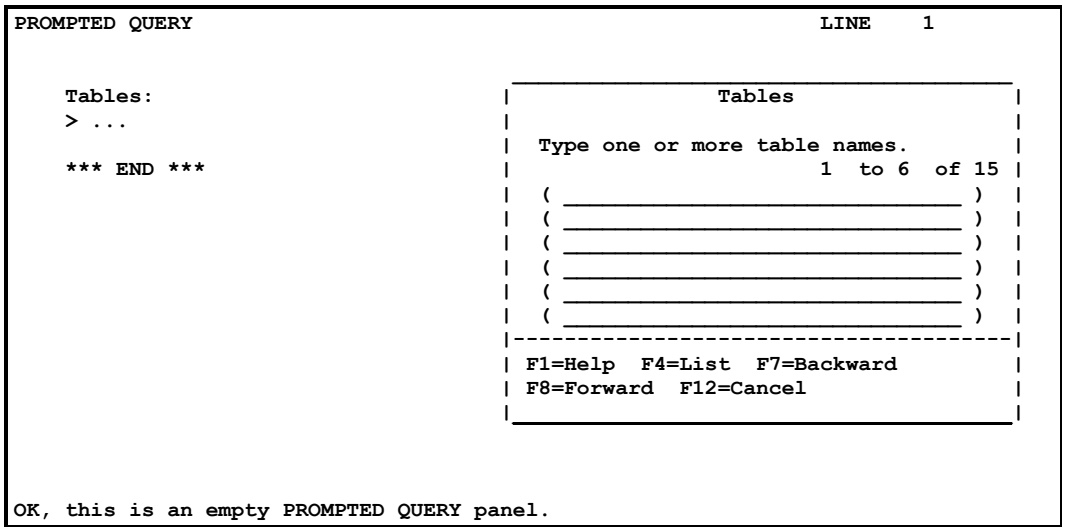


Figure 5–29, Prompted Query Panel

The prompted panels are displayed on the right-hand side of the screen. As you build each part of the query in the dialog panels, the query itself is displayed in the echo area, on the left-hand side of the screen.

To return to an empty *Prompted Query* panel at any time:

- Type ***RESET QUERY*** at the "Command" prompt.
- Press **ENTER**.

5.3.3 List the Available Tables

You can view a list of all the tables you are authorized to use (Figure 5–31) by pressing the **LIST** key from the *Tables* dialog panel.

When you use the **LIST** key, you can specify search information for your list on the *Tables* dialog panel. This makes the list smaller and easier to use. In addition, if you add search information to filter your list, the smaller list runs faster than a listing of all tables. There are several ways you can limit your list.

Assume you are looking for a table containing a name beginning with "LO". To obtain this limited list, type ***LO*** (or ***lo***) and the percent sign (***%***) as shown in Figure 5–30. The percent sign is a selection symbol that stands for any number of characters; it is useful when you only know part of a name and do not know the exact letters in the desired name.

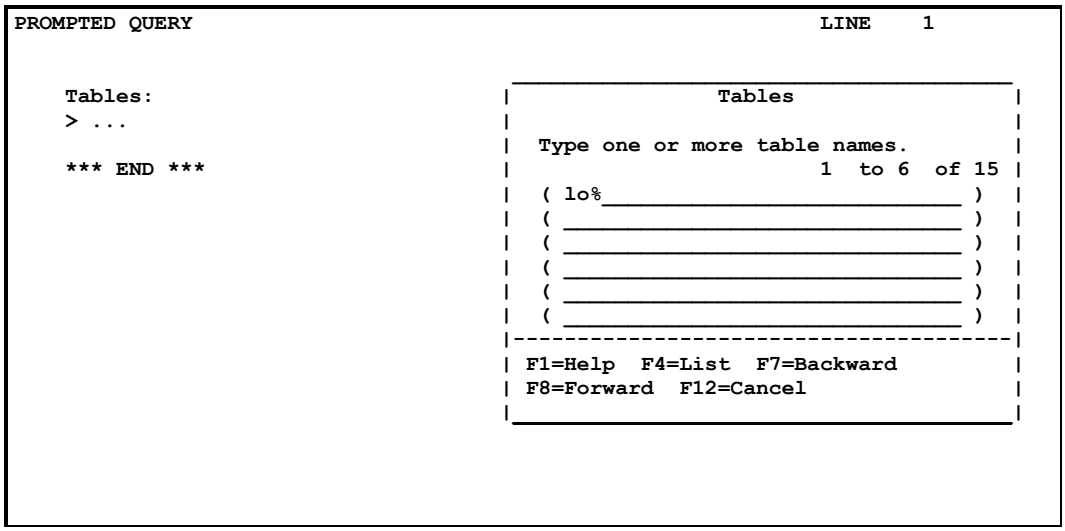


Figure 5–30, Search Criteria Entered on the Prompted Query Panel

- Type ***lo%,*** the search criteria, in the entry area of the *Tables* dialog panel.
- Press the **LIST** key.

This displays the *Table List* panel (Figure 5–31) with the names of all the tables beginning with "LO".

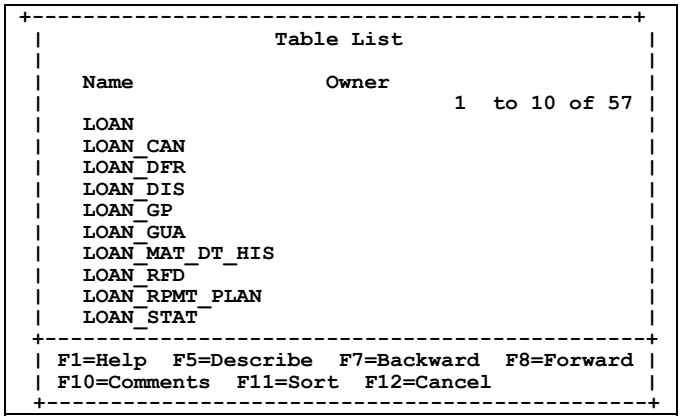


Figure 5–31, Table List Panel

5.3.4 Getting Information About the Tables

You sometimes need more information about tables before making your selection. To view a short comment line for each of the tables on the list, use the **COMMENTS** key. This causes the *Table List* panel to expand and display remarks about each table (Figure 5–32).

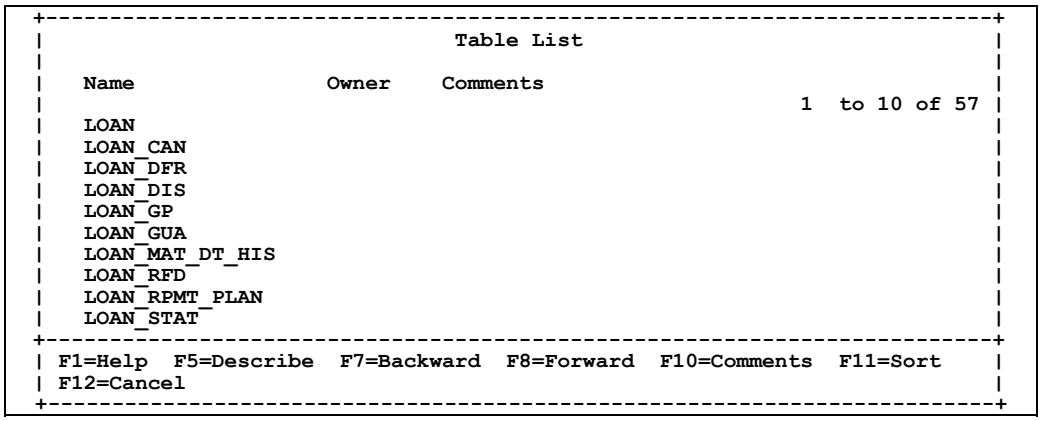


Figure 5–32, Table List Panel with Comments

If any of the comment lines end with a continuation symbol (>), it means the comment is longer than can be displayed with the **Comments** function. To see the rest of the comment and other information for a specific table:

- Press the **TAB** key to advance the cursor to the desired table for the specific description.
- Press the **DESCRIBE** key.

A *Description* panel for the LOAN table displays (Figure 5–33).

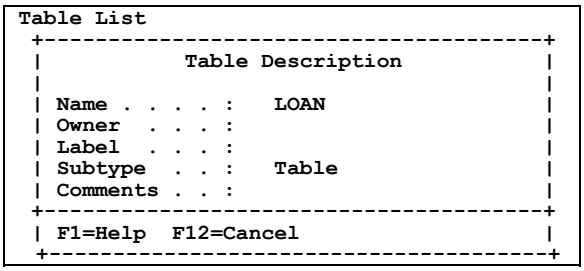


Figure 5–33, Description Panel for LOAN Table

The *Description* panel provides the following information for a specified table:

Name	The name of the table
Owner	The userid of the owner of the table (if applicable)
Label	The label (if assigned) by which the table is known in a report
Subtype	The subtype of the table: Table, View, or Alias (DB2 only)
Comments	Descriptive comments about the table

If you are working on a table you own (one that you created), this Table Description Panel supplies only the name of the table and not the owner.

5.3.5 Selecting the Tables

To leave the *Description* panel and return to the *Table List* panel:

- Press the **CANCEL** key.

Notice that the table names in the list of tables are not numbered. The Table List is a multiple selection list. To select the tables for your query, type a character in front of the desired tables. You can select up to 15 tables for your query. For example, to select the LOAN table:

- Type an ***X*** to the left of desired LOAN.
- Press **ENTER**.

The *Tables Dialog* panel displays (Figure 5–34) with LOAN selected.

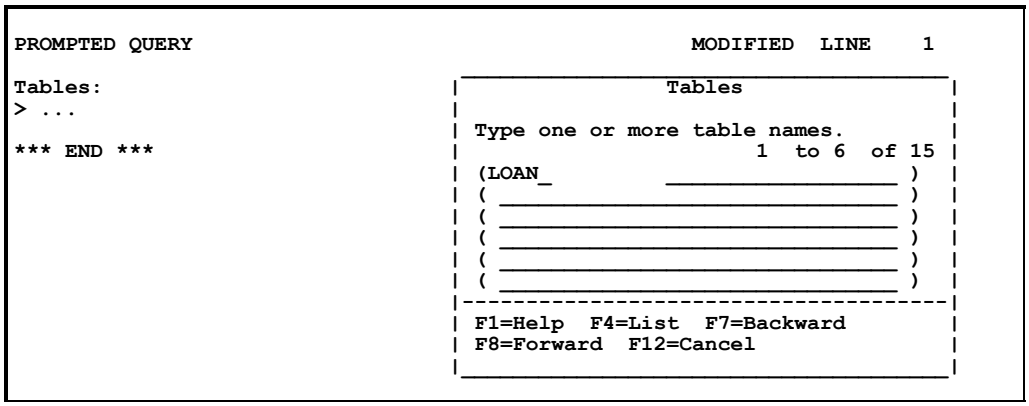


Figure 5–34, Tables Dialog List with the Selected Table

- Press **ENTER** again.

LOAN appears in the echo area and the *Specify* dialog panel displays (Figure 5–35).

```
PROMPTED QUERY                                  MODIFIED  LINE    1
                                               +------------------------+
   Tables:                                     |        Specify         |
      LOAN                                     |                        |
                                               | Select an item.        |
   Columns:                                    |                        |
      ALL                                      | 2 1. Tables...         |
                                               |   2. Columns...        |
  *** END ***                                  |   3. Row Conditions... |
                                               |   4. Sort...           |
                                               |   5. Duplicate Rows... |
                                               +------------------------+
                                               | F1=Help  F12=Cancel    |
                                               +------------------------+


 OK, ENTER performed. Please proceed.
```

Figure 5–35, Selected Table in Echo Area with Specify Dialog List

5.3.6 Select Columns

Once you have selected a table, you can select the columns from that table that you want displayed in your report:

Because Prompted Query has already chosen option 2, COLUMNS, you do not have to specify an item number in the *Specify* dialog panel.

- Press **ENTER**.

If the table chosen is the previous example of LOAN, when you press **ENTER** the *Columns Dialog* panel displays (Figure 5–36).

```
+-------------------------------------------+
|                  Columns                  |
|                                           |
| Select one or more columns.  You can also |
| select either an expression or function.  |
|                            1  to 8  of 43 |
|    LOAN -- all                            |
|     NO                                    |
|     DT                                    |
|     FFEL DUP ID                           |
|     PER BEG DT                            |
|     PER END DT                            |
|     CURR MAT DT                           |
|     ACAD LVL                              |
|                                           |
|   1. Expression (A+B, etc.)...            |
|   2. Summary Functions (SUM, etc.)...     |
+-------------------------------------------+
| F1=Help  F5=Describe  F7=Backward         |
| F8=Forward  F12=Cancel                    |
+-------------------------------------------+
```

Figure 5–36, Columns Dialog Panel

You sometimes need more information about the columns before you can select one or more of them for your query. QMF helps you by providing descriptive information on a specific column. To get information on the Academic Level column shown in Figure 5–36:

- Press the **TAB** key to move the cursor to the Academic Level, ACAD_LVL column.
- Press the **DESCRIBE** key.

The *Column Description* panel displays (Figure 5–37).

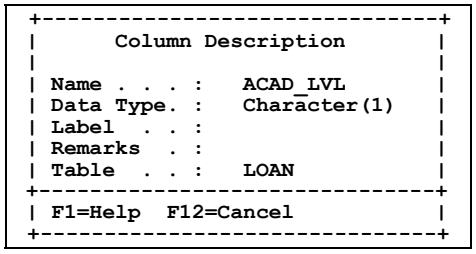


Figure 5–37, Column Description Panel

The *Column Description* panel provides the following information on the specified column:

Name	The name of the column
Data Type	The form in which the data is displayed (character, integer, decimal)
Label	The label that has been assigned to the column (if one exists)
Remarks	Descriptive remarks about the column
Table	The name of the table containing the column, including owner

To leave the *Column Description* panel and return to the *Columns* panel:

- Press the **CANCEL** key.

To select the columns that you want in your results, type any character (for example, ***X***) in front of the options desired. For example, to select the CURR_MAT_DT, CURR_LOAN_ STAT, AMT, OUT_PRIN_BAL, CURR_LEN_CODE, SCH_CODE, and STU_NO columns, shown in Figure 5–36:

- Press the **TAB** key to advance your cursor to the CURR_MAT_DT option.
- Type an ***X*** in front of CURR_MAT_DT.

After you type the character, the cursor advances to the next column name.

- Press the **FORWARD** key to display additional columns.

- Type an ***X*** in front of each of the other column names, using the **TAB** key to move from column to column.

- Press **ENTER** after you have selected all desired columns.

The columns you selected are displayed in the echo area on the *Prompted Query* panel (Figure 5–38) with the number 3 displayed in the *Specify* dialog panel.

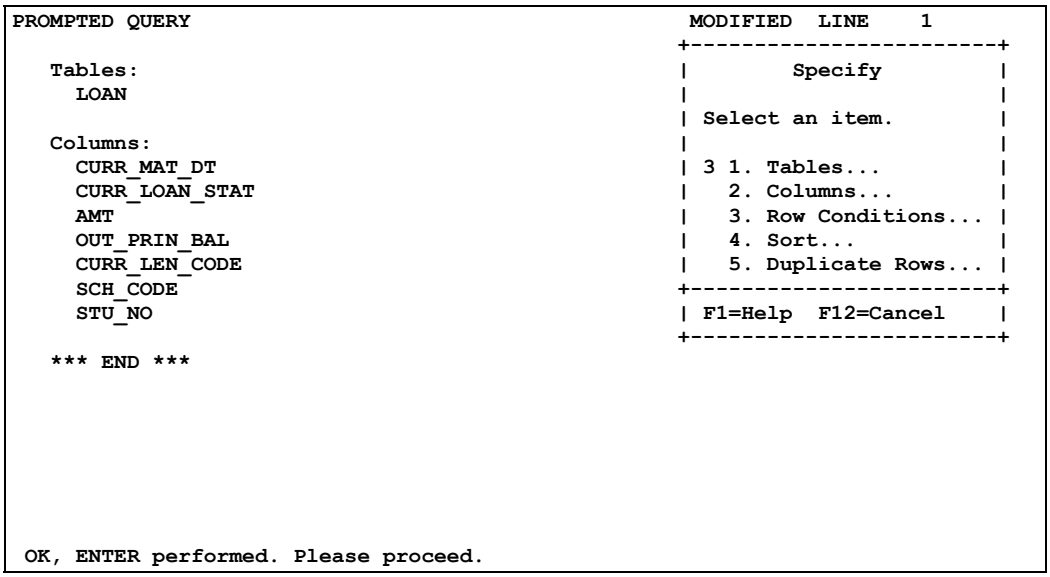


Figure 5–38, Columns in Echo Area with Specify Dialog Panel

5.3.7 Build a Row Condition

Once you have selected the columns from the desired table, you can limit which rows are shown. For example, if you want to show only those rows for the LOAN table, where the Lender Code is 899986, you can build a row condition, using a series of dialog panels.

Continuing with the example in Figure 5–38, Prompted Query has already chosen Option 3, ROW CONDITIONS, in the *Specify* dialog panel, so you do not have to specify an item. To display the *Row Conditions* dialog panel:

- Press **ENTER**.

The *Row Conditions* dialog panel displays (Figure 5–39).

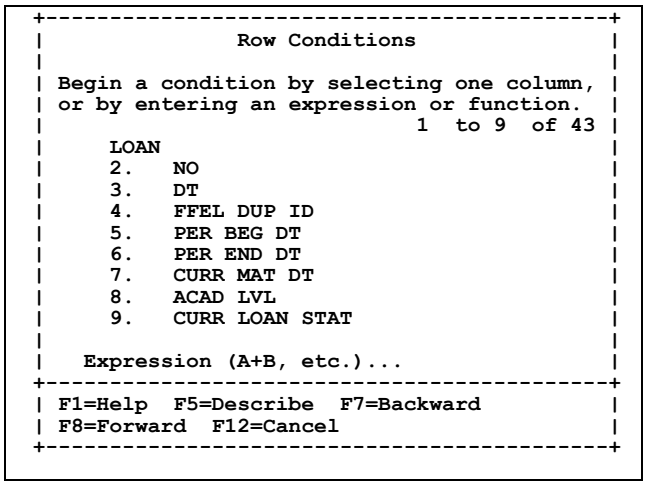


Figure 5–39, Row Conditions Dialog Box

The first step in building a row condition is to select the column as the subject of your row condition. When selecting columns for row conditions, you are not limited to those columns you chose to display in your report. All columns in the table are available for building row conditions. In this example, because you want to limit the rows to those where the Lender Code is 899986, you need to select the CURR_LEN_CODE column from the selection list (Figure 5–39).

- Press the **FORWARD** key until CURR_LEN_CODE is displayed.
- Type ***28*** in the *Row Conditions* dialog panel to select the CURR_LEN_CODE column.
- Press **ENTER**.

The *Comparison Operators* dialog panel is now displayed (Figure 5–40).

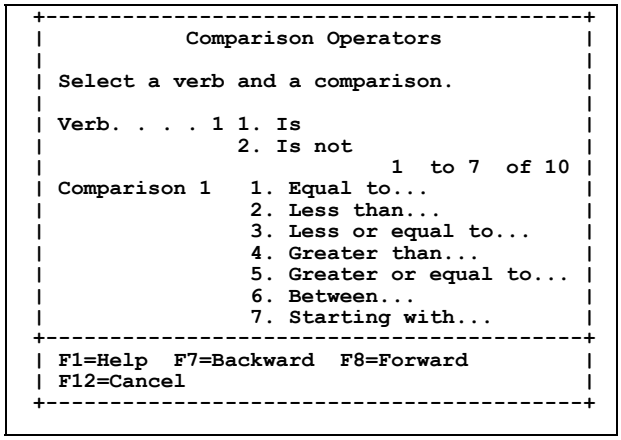


Figure 5–40, Comparison Operators Dialog Panel

In the *Comparison Operators* dialog panel, you must select two options: VERB (Is or Is not), and the desired COMPARISON. Verb Option 1 (IS) and comparison Option 1 (EQUAL TO) are defaults. In this example, the row desired is If CURR_LEN_CODE Is Equal To ‘899986’. If you

want a different verb or comparison operator, just type the corresponding number for the desired option.

Figure 5–41 shows how Prompted Query operators relate to SQL WHERE statements:

Prompted Syntax	SQL Syntax	SQL Example
Is Equal to	=	WHERE CURR_LEN_CODE = 899986
Is Less than	<	WHERE CURR_LEN_CODE < 899986
Is Less or equal to	<=	WHERE CURR_LEN_CODE <= 899986
Is Greater than...	>	WHERE CURR_LEN_CODE > 899986
Is Greater or equal to	>=	WHERE CURR_LEN_CODE >= 899986
Is not equal to	<>	WHERE_CURR_LEN_CODE <> 899986
Is Between...	BETWEEN	WHERE CURR_LEN_CODE BETWEEN 832885 and 899986
Is Starting with...	LIKE 'x%'	WHERE CURR_LEN_CODE LIKE '8%'
Is Ending with...	LIKE '%x'	WHERE CURR_LEN_CODE LIKE '%9'
Is Containing...	LIKE '%x%'	WHERE CURR_LEN_CODE LIKE '%3%'
Is NULL	IS NULL	WHERE CURR_LEN_CODE IS NULL

Figure 5–41, Prompted Query Operators

The SQL equivalent for the IS NOT option is just like the IS SQL equivalent, but the word “not” precedes the column name.

- Press **ENTER**.

Continuing with this example, since the EQUAL TO option was selected from the *Comparison Operators* panel, the last dialog panel in this series, the *Equal To* dialog panel, displays (Figure 5–42).

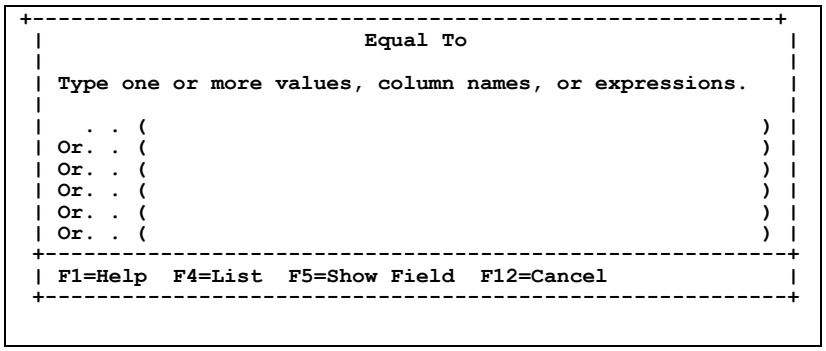


Figure 5–42, Equal To Dialog Panel

- Type ***899986*** (or the desired value) in the field inside the first set of parentheses on this panel.

- Press **ENTER**.

1. **The *Equal To* panel allows you to specify more than one value, each separated by the word "or".**

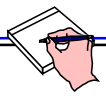
2. **When typing a character string in the *Equal To* panel, do not enclose it in quotation marks unless it contains a special character (such as *, -, or /).**

The result of the dialog is shown in the echo area, and the *Specify* dialog panel displays again (Figure 5–43).

```
PROMPTED QUERY                                          MODIFIED  LINE    1
                                                      +-------------------------+
  Tables:                                             |        Specify          |
    LOAN                                              |                         |
                                                      | Select an item.         |
  Columns:                                            |                         |
    CURR MAT DT                                       |   1. Tables...          |
    CURR LOAN STAT                                    |   2. Columns...         |
    AMT                                               |   3. Row Conditions...  |
    OUT PRIN BAL                                      |   4. Sort...            |
    CURR LEN CODE                                     |   5. Duplicate Rows...  |
    SCH CODE                                          +-------------------------+
    STU NO                                            | F1=Help  F12=Cancel     |
                                                      +-------------------------+
  Row Conditions:
    If CURR LEN CODE Is Equal To '899986'

  *** END ***



OK, ENTER performed. Please proceed.
```

Figure 5–43, Row Conditions Displayed in Echo Area with Specify Dialog Panel

There is no default number selected in the *Specify* dialog panel at this point. To select items 4 or 5, type the appropriate number.



Notice that in the echo area Prompted Query has put single quotations around the word 899986 because it consists of character data. You would have to put single quotes around it yourself if you wrote the row condition in SQL. But you should not enclose character data in quotation marks when using the *Equal To* panel in Prompted query; Prompted Query will supply them for you.

5.3.8 Canceling out of the Dialog Panel

After creating your query, exit from the *Specify* dialog panel:

- Press the **CANCEL** key.

The *Specify* dialog panel is removed and the finished query is displayed in the echo area.

5.3.9 Running the Query

To run the query:

- Press the **RUN** key.

An example of the report that would be displayed from the example query is shown in Figure 5–44.

```
REPORT                                          LINE 1      POS 1      79


  CURR        CURR                    OUT   CURR
  MAT         LOAN                    PRIN  LEN     SCH             STU
   DT         STAT          AMT       BAL   CODE    CODE            NO
  ----------  ----  -----------  -----------  ------  ------  -----------
  1987-09-01  PF           1250            0  899986  001526     37000002
  1987-09-01  PF           2500            0  899986  001526     37000002
  1987-09-01  PF           1338            0  899986  001526     37000002
  1988-04-01  DU           4000            0  899986  002199     37000004
  1991-12-01  RP           7500            0  899986  002838     37000007
  1992-11-01  RP           2333            0  899986  003765     37000008
  1992-11-01  RP           1699            0  899986  003765     37000008
  1992-11-01  RP           1699            0  899986  003765     37000008
  1992-11-01  RP           2625            0  899986  003765     37000008
  1983-11-13  PF           2500            0  899986  002083     37000009
  1985-11-29  PF           5000            0  899986  002218     37000010
  1983-08-01  PF           5000            0  899986  004757     37000011
1=Help         2=           3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward    9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
  COMMAND ===>                                                 SCROLL ===>
                                  PAGE
```

Figure 5–44, Report Panel Displaying Results of the RUN Command

5.3.10 Changing the Query

You may decide the report is not what you wanted. The query can easily be changed.

- Press the **QUERY** key to return to the *Prompted Query* panel.

If you want the report ordered by SCH_CODE:

- Press the **SPECIFY** key to display the *Specify* dialog panel.
- Type ***4*** to select the SORT option.
- Press **ENTER**.

The *Sort* dialog panel displays (Figure 5–45).

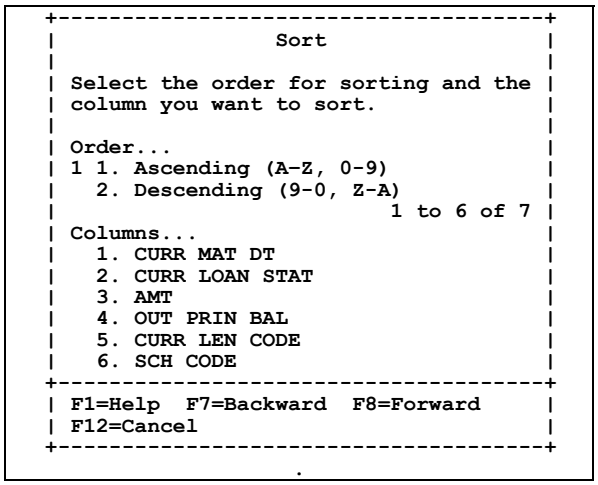


Figure 5–45, Sort Dialog Box

At the bottom of this panel, all columns selected in the query are listed. The data cannot be sorted by a unselected column.

- Select the corresponding ***number*** associated with SCH_CODE by typing ***6***.

The top of the panel prompts to select the desired sort order: ascending or descending. The default is ascending.

- Press **ENTER**.
- Press the **CANCEL** key.

The SORT condition is now added to the echo area of Prompted Query. If you wish to delete lines from the query, rather than add new lines, use the **DELETE** key.

- Press the **RUN** key to run the query and display the report.

5.3.11 Saving the Query

You can save your prompted query in the database and run it whenever you want. To save your query:

- Type ***SAVE QUERY AS SCHCODE_Q (SHARE = YES*** or ***(S=Y*** at the "Command" prompt.
- Press **ENTER**.

Your query is saved in the database, and the name you gave the query is displayed at the top of the *Prompted Query* panel.

5.3.12 Retrieve the Saved Query

Queries cannot be retrieved if any *Prompt* dialog panel is displayed, so be sure to exit from all prompt panels before retrieving a query. To retrieve the saved query:

- Type ***DISPLAY SCHCODE_Q*** at the "Command" prompt.
- Press **ENTER**.

QMF retrieves the saved query from the database and displays it in the *Prompted Query* panel (Figure 5–46).

```
PROMPTED QUERY     ED0.SCHCODE_Q                                  LINE    1

   Tables:
     .LOAN

   Columns:
     CURR_MAT_DT
     CURR_LOAN_STAT
     AMT
     OUT_PRIN_BAL
     CURR_LEN_CODE
     SCH_CODE
     STU_NO

   Row Conditions:
     If CURR_LEN_CODE Is Equal To '899986'

   Sort:
     Ascending by SCH_CODE

 1=Help       2=Run        3=End         4=Show SQL  5=Change      6=Specify
 7=Backward   8=Forward    9=Form       10=Insert   11=Delete     12=Report
 OK, SCHCODE_Q is displayed.
  COMMAND ===>                                                  SCROLL ===> PAGE
```

Figure 5–46, Retrieved Query Displayed in the Prompted Query Panel

5.3.13 Displaying the SQL Equivalent

The Prompted Query can be shown in SQL format. To display the Prompted Query in SQL format:

- Press the **SHOW SQL** key.

The Prompted Query is displayed in SQL Query format (Figure 5–47).

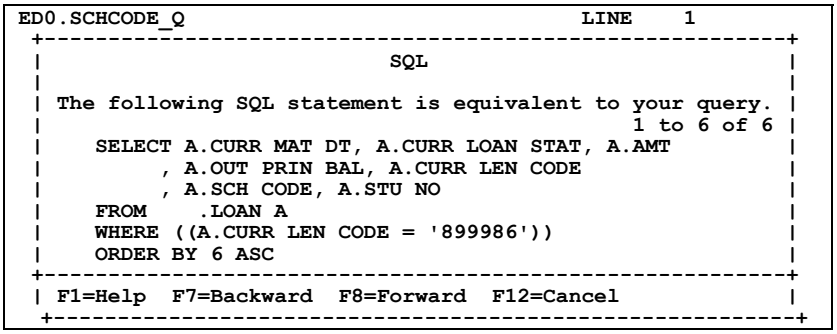


Figure 5–47, Prompted Query Displayed in SQL Format

This is the syntax SQL needs to retrieve the information that Prompted Query selected.

5.3.14 Convert the Query

The SQL query that is displayed using the **SHOW SQL** key, while informative, cannot be edited, run, or saved. To convert a Prompted Query into an equivalent SQL query that can be edited, run, or saved, use the CONVERT command. Converting a query is especially useful for expanding a basic prompted query into a more complex query using the SQL language.

The SQL query produced with the CONVERT command cannot be converted back to a Prompted Query format. If you want to keep a copy of your original prompted query, be sure to save it before converting it.

To convert the prompted query you have been working with:

- Press the **CANCEL** key to return to the "Command" prompt.
- Type ***CONVERT QUERY***.
- Press **ENTER**.

The *Convert Confirmation* panel displays (Figure 5–48).

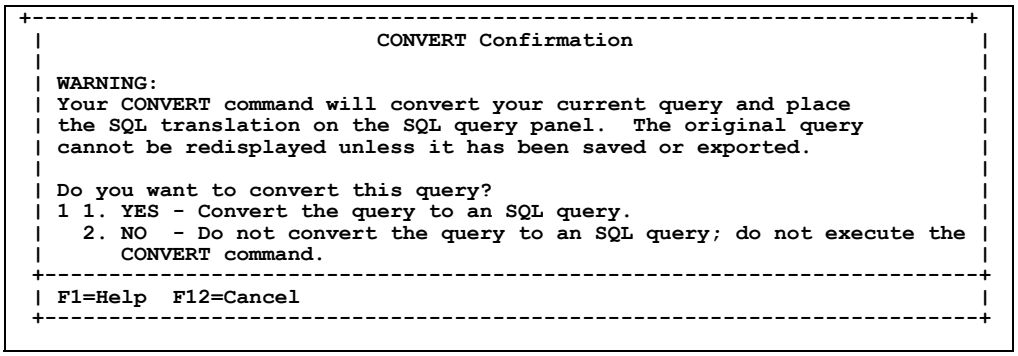


Figure 5–48, Convert Confirmation Panel

This *Convert Confirmation* panel warns you that the original query cannot be redisplayed, unless you have a saved copy of it in the database.

- Press **ENTER** to accept the YES option (the default) and complete the conversion.

The SQL query equivalent is displayed in the *SQL Query* panel (Figure 5–49).

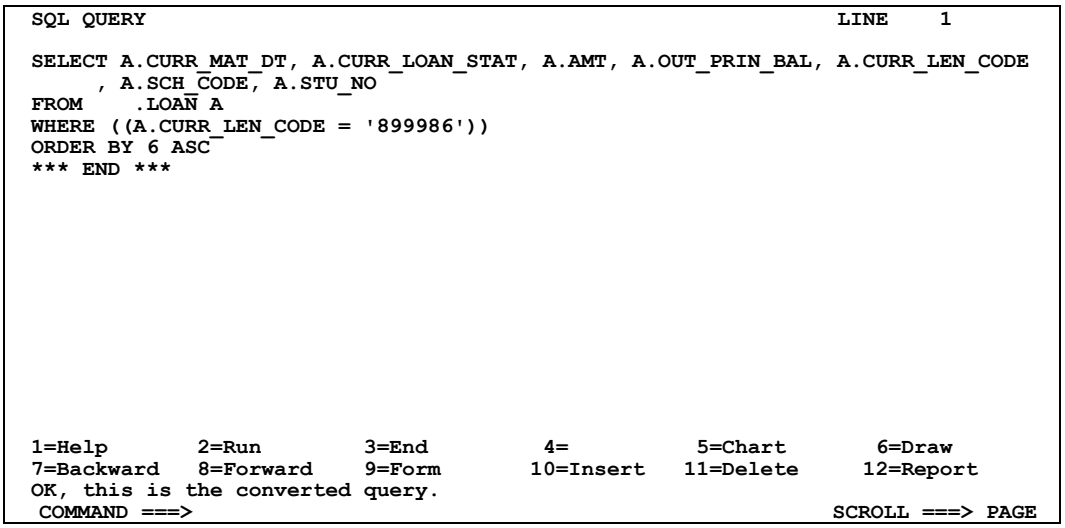


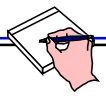
Figure 5–49, Converted SQL Query Panel

You can now modify this query and save it under a new name to avoid destroying the saved copy of the Prompted Query.

5.3.15 Reviewing Data from More than One Table—Joining Tables

In all our examples so far, we have been selecting information from one table, LOAN. However, the results of a query can include information from more than one table. To create a query that

draws data from more than one table, use a JOIN statement. A join links two or more tables by using common columns, that is columns which appear in both data tables. Common columns can have the same column name or different names in different tables. Through this link, the query can access related information from the two tables. Only those records having a matching value in the common columns are selected for the report.



The maximum number of tables that can be joined is 15. When joining tables, keep in mind that some of the tables are very large. For that reason, you need to plan the results you want from a query very carefully.

5.3.16 Example of Joining Tables

The LOAN table contains information about all NSLDS loans. The STU table contains information about all the students. You want to list the loans greater than $1,000 with the students' names.

Student's first name and last name are listed in the STU table, but STU has no loan information. Loan amounts are listed in LOAN. Data must be selected from both tables. We need a way to tell which rows in STU correspond to which rows in LOAN, or which loans belong to which students.

Each entry in STU has a student number, and each loan in LOAN has a student number. We can link the information in the two tables by matching the student numbers and joining the appropriate rows. This is called joining the tables because the corresponding rows are joined together to form a single row in the report.

To create a query that displays the loan number, maturity date, amount, student's first name, and student's last name for all loans greater than $1,000, select the tables from the *Prompted Query* panel by using the following procedure:

- Type ***LOAN*** in the *Tables* dialog panel.
- Type ***STU*** on the next line of the *Table* dialog panel.
- Press **ENTER**.

The *Join Columns* dialog panel displays (Figure 5–50).

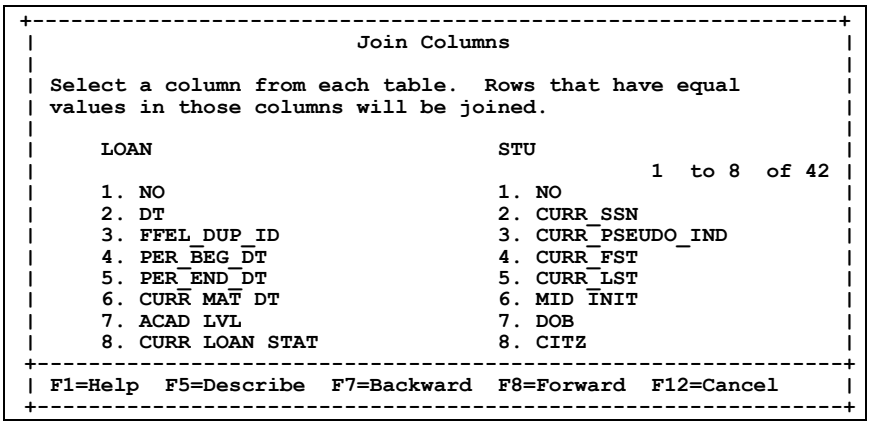


Figure 5–50, Join Columns Dialog Panel

5.3.16.1 Joining the Columns

To get data from two tables, you must link the tables together (join them) on columns that contain the same kind of information. There must be some overlap of information, some common ground. The STU_NO column in the LOAN table and the NO column in the STU table both contain student numbers. You can join the tables on these two columns.

By joining these two tables by student number, you are linking every row in LOAN to every row in STU with the same student number.

On the *Join Columns* panel:

- Press the **FORWARD** key to find STU_NO in LOAN.
- Type ***36***, to select STU_NO item from the LOAN table.
- Press the **BACKWARD** key to find NO in STU.
- Press the **TAB** key.
- Type ***1***, to select NO item from the STU table.
- Press **ENTER**.

The results of this ***Join*** are now displayed in the echo area, and the *Specify* dialog panel displays (Figure 5–51).

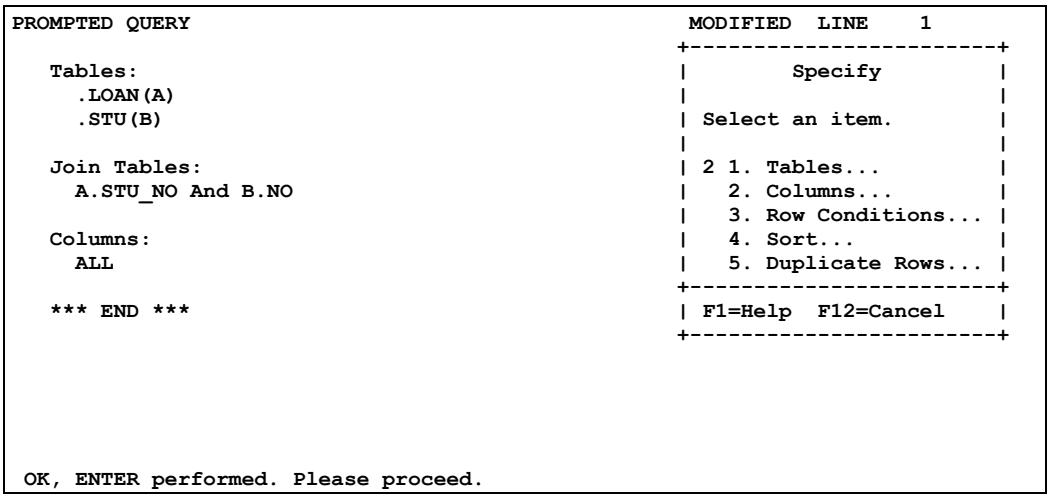


Figure 5–51, Results of Join Displayed in Echo Area with Specify Dialog Panel

The letter identifiers (shown in the echo area as A.STU_NO and B.STU) are used by QMF to help you differentiate between the tables. In this example, the columns on which you are joining the tables have different names. However, if you want to join two tables on columns having the same name, the letter identifiers let you distinguish between the two columns.

To complete the join of these two tables, you must also join Student Sequence Number. To find all the fields that must be joined in order to properly join tables in NSLDS, refer to Section 15.2. Furthermore, some attributes (columns) may not be what you think they are. For example, STU_NO and NO seem to be Social Security Numbers; they are not. CURR_SSN in STU is the current Social Security Number for that student. **Do not** judge a column by its name. Refer to the definitions of fields in Section 15.2 to make sure you are using the right ones.

5.3.16.2 Selecting the Columns

On the *Specify* dialog panel:

- Press **ENTER** to select the COLUMNS option.

The *Columns* dialog panel displays (Figure 5–52).

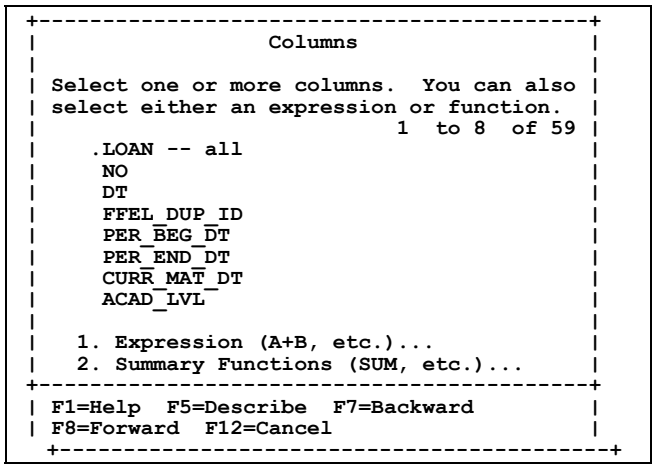


Figure 5–52, Columns Dialog Panel

In the *Columns* dialog panel:

- Type ***X*** beside NO, CURR_MAT_DT, and AMT from LOAN.
- Press the **FORWARD** key to advance to the STU table.
- Type ***X*** beside CURR_FST and CURR_LST from STU.
- Press **ENTER**.

The columns you selected are now displayed in the echo area of the *Specify* dialog panel (Figure 5–53).

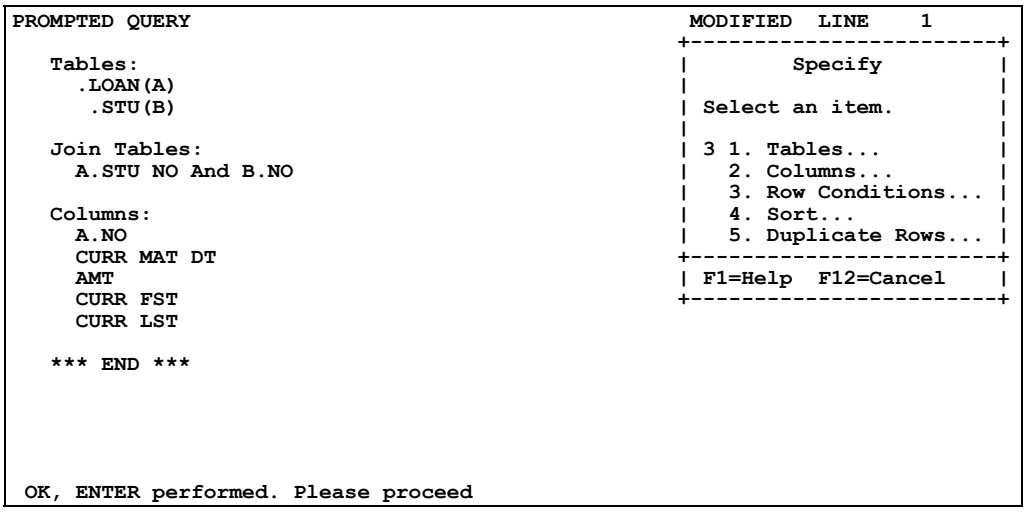


Figure 5–53, Columns Selected Displayed in Echo Area

5.3.16.3 Building a Row Condition

You want to display only those rows where the amount is greater than 1000. Remember that you can build a row condition based on a column you have chosen not to show.

To build the row condition If AMT is GREATER THAN 1000:

- Type ***3*** and press **ENTER** on the *Specify* dialog panel to select the ROW CONDITIONS option.
- Press the **FORWARD** key to scroll forward.
- Type ***10*** and press **ENTER** on the *Row Conditions* dialog panel to select the AMT option.
- Type ***4*** and press **ENTER** on the *Comparison Operators* dialog panel to select the VERB "is" and the COMPARISON OPERATOR "greater than".
- Type ***1000*** and press **ENTER** on the *Greater Than* dialog panel to display the *Specify* dialog panel.
- Press the **CANCEL** key to end the query creation process and remove the *Specify* dialog panel.

Your finished query is displayed (Figure 5–54).

```
PROMPTED QUERY                                          MODIFIED  LINE    1

  Tables:
    .LOAN(A)
    .STU(B)

  Join Tables:
    A.STU_NO And B.NO

  Columns:
    A.NO
    CURR_MAT_DT
    AMT
    CURR_FST
    CURR_LST

  Row Conditions:
    If AMT Is Greater Than 1000

  *** END ***
1=Help       2=Run        3=End         4=Show SQL  5=Change      6=Specify
7=Backward   8=Forward    9=Form       10=Insert   11=Delete     12=Report
OK, CANCEL command executed successfully.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–54, Complete Query Displayed in the Prompted Query Panel

If for some reason you wanted to change the query, press the **SPECIFY** key to recall the *Specify* dialog panel.

5.3.16.4 Running the Query

To run the query:

- Press the **RUN** key to produce the report in Figure 5–55.

```
REPORT                                            LINE 1      POS 1      79



               CURR
               MAT                        CURR          CURR
          NO    DT                   AMT  FST           LST
  -----------  ----------  -----------  ------------  -------------------------
     37000002  1987-09-01         1250  CHRISTOPHER   LEE
     37000002  1987-09-01         2500  CHRISTOPHER   LEE
     37000002  1987-09-01         1338  CHRISTOPHER   LEE
     37000003  1992-08-01         2625  MICHAEL       STEWART
     37000004  1988-04-01         4000  JEFFREY       MYERS JR
     37000005  1981-11-01         2500  STEVEN        HOLDEN
     37000006  1993-11-28         2625  WILLIAM       CHARBONNIER
     37000007  1991-12-01         7500  JEFFREY       CHARBONNIER
     37000007  1995-11-13         1703  JEFFREY       CHARBONNIER
     37000008  1992-11-01         2333  PATRICIA      WALTERS
     37000008  1992-11-01         1699  PATRICIA      WALTERS
     37000008  1992-11-01         1699  PATRICIA      WALTERS
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
 COMMAND ===>                                                   SCROLL ===> PAGE
```

Figure 5–55, Report Panel Displaying Results of RUN Command

5.4 Query by Example

QBE is a language for querying relational data by making changes to a grid that represents the underlying table. QBE keywords are used to retrieve, update, delete, and insert data. They are also used to control the presentation of report data.

5.4.1 Displaying the QBE Query Panel

Before you can write a query in QBE, you need to display the *QBE Query* panel. This can be done by changing the QMF Profile or by entering the command RESET QUERY (LANGUAGE = QBE) from the QMF “Command” prompt.

- Type ***RESET QUERY (LANGUAGE = QBE)***.
- Press **ENTER**.

The *QBE Query* panel displays (Figure 5–56).

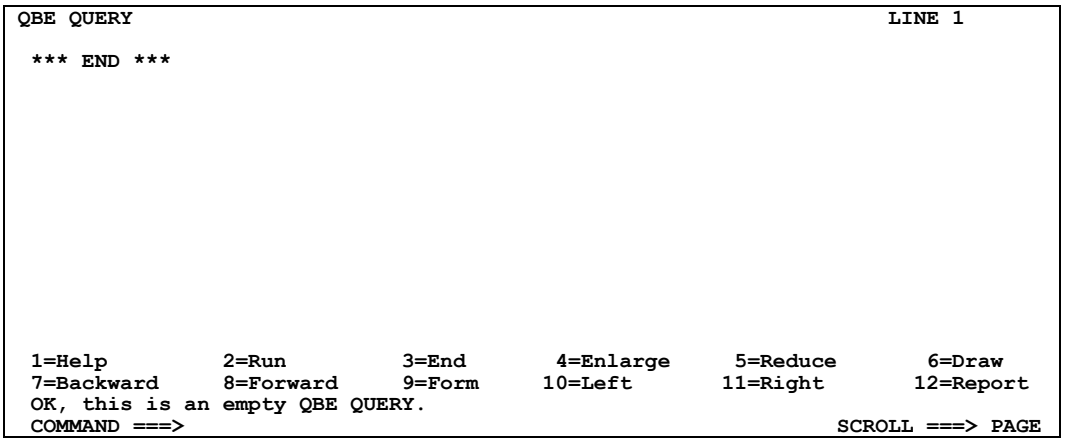


Figure 5–56, QBE Query Panel

5.4.2 Drawing Example Tables

In QBE, queries are created in an "example table." An example table is a grid in which you enter instructions about how you want the data presented in your report. To display a grid of the LENDER table:

- Type ***DRAW LEN*** at the "Command" prompt.
- Press **ENTER**.

The LENDER table is a new example table used in the following examples. The framework for this table is shown in Figure 5–57.

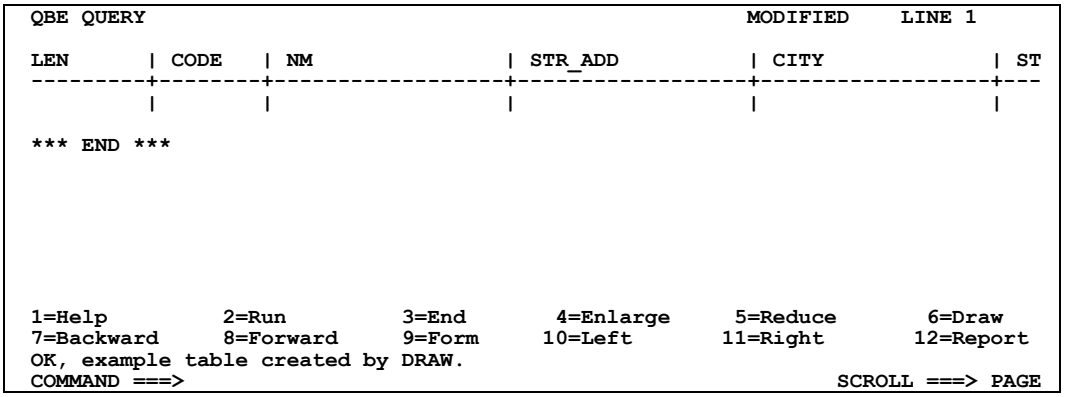


Figure 5–57, Framework of the LENDER Table

Within this framework, you can select the columns to present with a "P", as explained in the following section. Use other QBE keywords to control the presentation of the report data and make changes to the database.

5.4.3 Presenting Certain Columns of a Table

To view data from selected columns of the example table, type ***P.*** under the names of the columns desired. Typing ***P.*** under the table name selects all columns from the table.

- Type ***P.*** under CODE.
- Type ***P.*** under NM.
- Type ***P.*** under STR_ADD.
- Type ***P.*** under CITY.
- Type ***P.*** under ST.

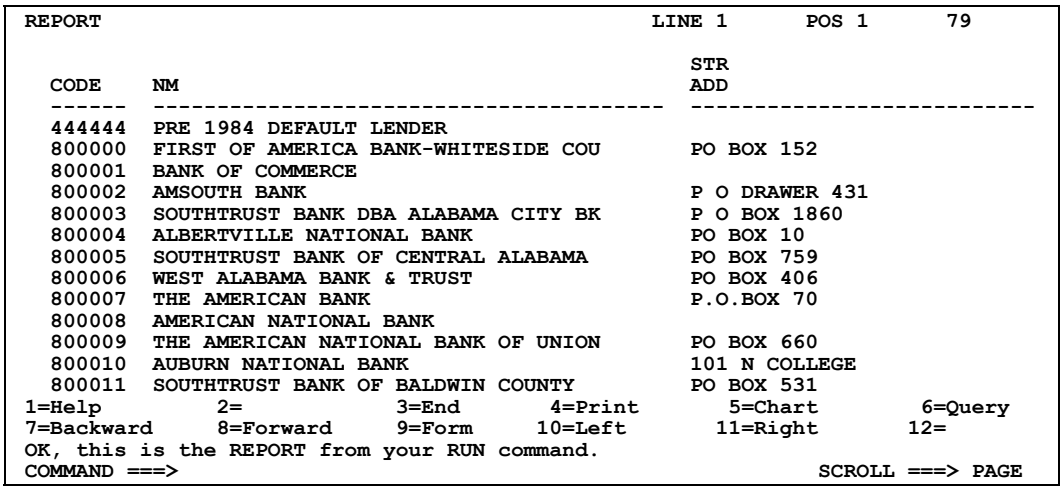
The selections are displayed on the screen (Figure 5–58).

```
 QBE QUERY                                              MODIFIED    LINE 1

 LEN       | CODE    | NM                | STR_ADD           | CITY              | ST
 ----------+---------+-------------------+-------------------+-------------------+---
           | p.      | p.                | p.                | p.                | p.

 *** END ***









 1=Help          2=Run          3=End        4=Enlarge      5=Reduce        6=Draw
 7=Backward      8=Forward      9=Form      10=Left        11=Right        12=Report
 OK, example table created by DRAW.
COMMAND ===>                                                    SCROLL ===> PAGE
```

Figure 5–58, Selected Columns in QBE

- Press the **RUN** key.

QBE produces the report shown in Figure 5–59.



```
REPORT                                          LINE 1      POS 1      79

                                                   STR
  CODE    NM                                       ADD
  ------  ---------------------------------------  ---------------------------
  444444  PRE 1984 DEFAULT LENDER
  800000  FIRST OF AMERICA BANK-WHITESIDE COU       PO BOX 152
  800001  BANK OF COMMERCE
  800002  AMSOUTH BANK                             P O DRAWER 431
  800003  SOUTHTRUST BANK DBA ALABAMA CITY BK      P O BOX 1860
  800004  ALBERTVILLE NATIONAL BANK                PO BOX 10
  800005  SOUTHTRUST BANK OF CENTRAL ALABAMA       PO BOX 759
  800006  WEST ALABAMA BANK & TRUST                PO BOX 406
  800007  THE AMERICAN BANK                        P.O.BOX 70
  800008  AMERICAN NATIONAL BANK
  800009  THE AMERICAN NATIONAL BANK OF UNION      PO BOX 660
  800010  AUBURN NATIONAL BANK                     101 N COLLEGE
  800011  SOUTHTRUST BANK OF BALDWIN COUNTY        PO BOX 531
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–59, Report Panel Displaying Results of RUN Command

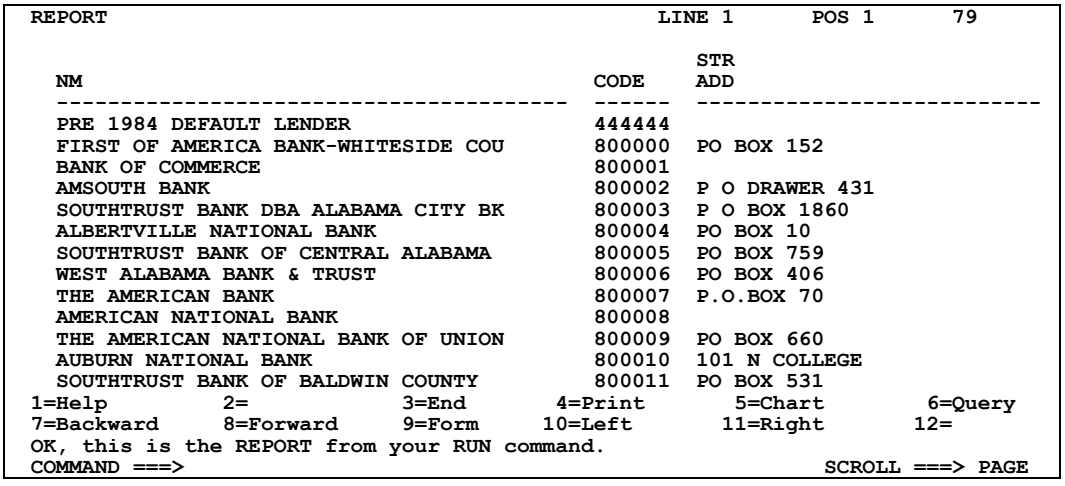
5.4.4 Changing the Order of Columns

The columns are, by default, displayed in the same order as they are listed in the table, as in Figure 5–59. To change the order of the columns displayed, type over the names of the columns in the example table.

To reverse the NM and CODE columns in Figure 5–59, follow these steps:

- Type ***NM*** over the CODE column.
- Press **TAB**.
- Type ***CODE*** over the NM column.
- Press the **RUN** key.

The *Report* panel displays with NM and CODE columns reversed (Figure 5–60).



```
REPORT                                          LINE 1      POS 1      79

                                                   STR
  NM                                       CODE    ADD
  ---------------------------------------  ------  ---------------------------
  PRE 1984 DEFAULT LENDER                  444444
  FIRST OF AMERICA BANK-WHITESIDE COU      800000  PO BOX 152
  BANK OF COMMERCE                         800001
  AMSOUTH BANK                             800002  P O DRAWER 431
  SOUTHTRUST BANK DBA ALABAMA CITY BK      800003  P O BOX 1860
  ALBERTVILLE NATIONAL BANK                800004  PO BOX 10
  SOUTHTRUST BANK OF CENTRAL ALABAMA       800005  PO BOX 759
  WEST ALABAMA BANK & TRUST                800006  PO BOX 406
  THE AMERICAN BANK                        800007  P.O.BOX 70
  AMERICAN NATIONAL BANK                   800008
  THE AMERICAN NATIONAL BANK OF UNION      800009  PO BOX 660
  AUBURN NATIONAL BANK                     800010  101 N COLLEGE
  SOUTHTRUST BANK OF BALDWIN COUNTY        800011  PO BOX 531
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–60, Report Panel Displaying NAME and CODE Reversed

- Press the **RIGHT** key to view report data in the ST column.

5.4.5 Presenting Certain Rows of a Table

There are many ways to choose which rows of a table you want to present.

To display only those rows of a table that have a certain value in some column, put the value under the column in the example table. That value is then a condition. The query selects just those rows of the table that contain the value in the indicated column.

You can, for example, display the same column names shown in the example table, but select only the rows with TX in the ST column.

- Press the **QUERY** key to return to the *QBE Query* panel.
- Type ***TX*** in the ST column over P.
- Press the **RUN** key.

The *Report* panel displays (Figure 5–61). The ST column data is no longer displayed in the report since the data is the same for all rows.

```
REPORT                                          LINE 1      POS 1      79



                                                    STR
  NM                                          CODE  ADD
  ------------------------------------------  ------  --------------------------
  BANK OF AMERICA, ATTN GORDAN ALLEN          800702  1925 WEST JOHN CARPENTER FR
  NEW HERITAGE FEDERAL CREDIT UNION           802098  4807 SPICEWOOD SPRINGS RD
  SECURITY STATE BANK                         809077  1910 PACIFIC PLACE, 16TH FL
  FIRST LIBERTY NATIONAL BANK                 810702  1900 SAM HOUSTON
  FIRST LOCKHART NATIONAL BANK                810703  111 MAIN ST
  MBANK PASADENA                              810704  P O BOX 952
  FIRST STATE BANK & TRUST COMPANY            810705  DRAWER 579
  ABILENE NATIONAL BANK                       810706  NUMBER ONE PETROLEUM PLACE
  DEPOSIT INSURANCE BRIDGE BANK, SAN          810707  PO BOX 900
  ALICE NATIONAL BANK                         810708  PO BOX 1790
  ALVIN STATE BANK                            810709  PO BOX 232 221 SO GORDON
  AMARILLO NATIONAL BANK                      810710  401 POLK ST PO BOX 1
  AMERICAN BANK                               810711
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–61, Report Panel Displaying Only Rows with TX in State Column

5.5 QMF Forms

QMF has been providing a default form in all the previous examples. If you want your report to look more formal, with more descriptive column headings, a title at the top of the report, a sub-

total of your columns, and similar refinements, you can create your own forms using the QMF form panels.

What is the difference between the two reports in Figure 5–62 and Figure 5–63?

REPORT 1:

REPORT LINE 1 POS 1 79

CURR MAT DT	CURR LOAN STAT	AMT	OUT PRIN BAL	CURR LEN CODE	SCH CODE	STU NO
1992-08-21	RP	4000	0	800241	001002	547009986
1988-07-01	RP	2500	0	899986	001002	122001636
1990-12-01	RP	1200	0	899986	001002	122002066
1988-07-01	RP	2500	0	899986	001002	122001636
1992-11-01	RP	1147	0	899986	001005	207003128
1992-11-01	RP	1479	0	899986	001005	207003128
1988-10-01	RP	2500	0	899986	001020	37001495
1988-10-01	RP	2275	0	899986	001020	37001495
1992-12-01	RP	2500	0	899986	001033	37000489
1990-01-01	RP	4000	0	899986	001033	37000515
1984-03-01	RP	2500	0	899986	001033	37000791
1987-04-09	RP	2500	0	899986	001033	37001379
1990-01-01	RP	2500	0	899986	001033	37001406

Figure 5–62, Default Form Report Panel

REPORT 2:

REPORT LINE 1052 POS 1 79

LEN	SCH CODE	STU NO	ST	LOAN MAT	LOAN AMT	OUT PRIN
899986	024605	122001641	RP	1989-03-01	$5,000.00	$0.00
	024605	122001641	RP	1989-03-01	$5,000.00	$0.00
	024618	37001289	RP	1991-01-01	$5,000.00	$0.00
	024714	122002531	RP	1988-12-01	$2,500.00	$0.00
	024714	122002531	RP	1986-05-01	$2,500.00	$0.00
	024984	37000321	RP	1992-11-01	$2,625.00	$0.00
				LENDER 899986 TOTALS	$2,877,596.00	$0.00
				TOTALS	$2,881,596.00	$0.00

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Figure 5–63, Formatted Form Report Panel

The data is the same in both reports, but the appearance is different. You can change one report into the other without changing your query.

5.5.1 What Is Formatting?

REPORT 1 and REPORT 2 have been formatted differently, and formatting determines the visual layout of data.

In previous sections, QMF automatically determined each report's format for you, as it did in REPORT 1. But in REPORT 2:

- The order of the columns is different.
- Column headings are more descriptive.
- The headings and data are aligned differently.
- Column widths are different.
- Spacing between columns is more attractive.
- Figures use dollar signs and commas.
- Totals and subtotals provide summary information.
- A page heading and footer make the report more descriptive.

5.5.2 Changing a Report Format

To change REPORT 1 into REPORT 2, you must change the form panels that QMF generated for REPORT 1. The following examples make successive changes to the form panels to check their effect on the report. The final result of these changes is REPORT 2.

Figure 5–64 shows the *SQL Query* panel for our example.

```
SQL QUERY                                              MODIFIED  LINE    1

SELECT  CURR_MAT_DT, CURR_LOAN_STAT, AMT, OUT_PRIN_BAL, CURR_LEN_CODE,
        SCH_CODE, STU_NO
FROM    LOAN
WHERE   CURR_LEN_CODE IN ('800241','899986')
        AND CURR_LOAN_STAT > 'PF'
        AND AMT > 1000
        AND OUT_PRIN_BAL BETWEEN 0 AND 100
ORDER BY CURR_LEN_CODE, SCH_CODE




*** END ***



1=Help       2=Run        3=End         4=          5=Chart       6=Draw
7=Backward   8=Forward    9=Form       10=Insert   11=Delete     12=Report
OK, QUERY is displayed.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–64, SQL Query Panel with Query Displayed

5.5.3 Displaying Form Panels

To display the report shown in Figure 5–65:

- Press the **RUN** key.
- Press the **FORM** key from the *Report* panel (Figure 5–65) to see the default form.

```
REPORT                                          LINE 1      POS 1      79


   CURR        CURR                        OUT   CURR
   MAT         LOAN                        PRIN  LEN     SCH             STU
    DT         STAT          AMT           BAL   CODE    CODE            NO
   ----------  ----  -----------  -----------  ------  ------  -----------
   1988-07-01  RP           2500            0  899986  001002    122001636
   1990-12-01  RP           1200            0  899986  001002    122002066
   1988-07-01  RP           2500            0  899986  001002    122001636
   1992-11-01  RP           1147            0  899986  001005    207003128
   1992-11-01  RP           1479            0  899986  001005    207003128
   1988-10-01  RP           2500            0  899986  001020     37001495
   1988-10-01  RP           2275            0  899986  001020     37001495
   1992-12-01  RP           2500            0  899986  001033     37000489
   1990-01-01  RP           4000            0  899986  001033     37000515
   1984-03-01  RP           2500            0  899986  001033     37000791
   1987-04-09  RP           2500            0  899986  001033     37001379
   1990-01-01  RP           2500            0  899986  001033     37001406
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–65, Report Panel Displaying Results of RUN Command

The default form is automatically generated by QMF at the time the query is run. It contains certain choices made by QMF about how the report should be formatted. QMF used the default form to produce REPORT 1. The default form QMF generated for our query example is shown in Figure 5–66.

```
FORM.MAIN

 COLUMNS:               Total Width of Report Columns: 73
  NUM COLUMN HEADING                              USAGE   INDENT WIDTH EDIT  SEQ
  --- ------------------------------------------ ------- ------ ----- ----- ---
    1 CURR_MAT_DT                                        2      10    TDY-  1
    2 CURR_LOAN_STAT                                     2      4     C     2
    3 AMT                                                2      11    L     3
    4 OUT_PRIN_BAL                                       2      11    L     4
    5 CURR_LEN_CODE                                      2      6     C     5

 PAGE:    HEADING  ===>
          FOOTING  ===>
 FINAL:   TEXT     ===>
 BREAK1:  NEW PAGE FOR BREAK? ===> NO
          FOOTING  ===>
 BREAK2:  NEW PAGE FOR BREAK? ===> NO
          FOOTING  ===>
 OPTIONS: OUTLINE? ===> YES                DEFAULT BREAK TEXT? ===> YES

 1=Help     2=Check    3=End          4=Show          5=Chart         6=Query
 7=Backward 8=Forward  9=            10=Insert       11=Delete       12=Report
 OK, FORM is displayed.
  COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–66, Form.Main Panel

If you do not see all the column headings, use the **FORWARD** key to scroll forward one page at a time. When the word '*** END ***' is displayed, you have reached the last column on the *Form.Main* panel.

There are several backup panels to the *Form.Main* panel that allow for more formatting options than *Form.Main* alone. The only backup panel described in this appendix is *Form.Columns.* All you need to know for now is that these other panels exist. To view the *Form.Columns* panel:

- Press the **SHOW** key.

The *Show Command Prompt* panel displays (Figure 5–67). The **SHOW** key is used to display a list of QMF panels so a different panel may be easily chosen.

```
+-------------------------------------------------------------------------------+
|                            SHOW Command Prompt                                |
|                                                                               |
| Enter the name or number of the panel to show. (                    )         |
|                                                              1  to 13 of 17   |
| 1. PROFile             Current user profile                                   |
| 2. PROC                Current procedure                                      |
| 3. Query               Current query                                          |
| 4. Report              Current report                                         |
| 5. CHARt               Default chart                                          |
| 6. Globals             Global variable list                                   |
| 7. FOrm                Current form                                           |
| 8.  Form.Main          Basic report formatting                                |
| 9.  Form.COLumns       Column attributes                                      |
| 10. Form.CONditions    User-defined conditions                                |
| 11. Form.CAlc          User-defined calculations                              |
| 12. Form.Page          Page heading and footing text                          |
| 13. Form.Detail        Detail text                                            |
+-------------------------------------------------------------------------------+
| F1=Help  F3=End  F7=Backward  F8=Forward                                      |
+-------------------------------------------------------------------------------+
```

Figure 5–67, Show Command Prompt Panel

- Type the corresponding ***number*** to select the FORM.COLUMNS option (i.e., ***9***).
- Press **ENTER**.

The *Form.Columns* panel displays (Figure 5–68).

```
FORM.COLUMNS

                        Total Width of Report Columns: 73
 NUM COLUMN HEADING                              USAGE   INDENT WIDTH EDIT  SEQ
 --- ------------------------------------------- ------- ------ ----- ----- ---
   1 CURR_MAT_DT                                         2      10    TDY-  1
   2 CURR_LOAN_STAT                                      2      4     C     2
   3 AMT                                                 2      11    L     3
   4 OUT_PRIN_BAL                                        2      11    L     4
   5 CURR_LEN_CODE                                       2      6     C     5
   6 SCH_CODE                                            2      6     C     6
   7 STU_NO                                              2      11    L     7
     *** END ***


 1=Help     2=Check    3=End          4=Show          5=Chart         6=Query
 7=Backward 8=Forward  9=Specify     10=Insert       11=Delete       12=Report
 OK, FORM.COLUMNS is shown.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–68, Form.Columns Panel

5.5.4 Changing the Column Sequence

The NUM column displays the number of each column in the order it was selected by the query. You cannot change this field, except by running a different query, which generates a new form.

You can, however, change the order in which the columns are displayed in your report by changing the SEQ (sequence) fields corresponding to each column in the form. For the final report in our example, we want the columns in this order: CURR_LEN_CODE, SCH_CODE, STU_NO, CURR_LOAN_STAT, CURR_MAT_DT, AMT, OUT_PRIN_BAL.

Press **TAB** to advance your cursor to the SEQ column. Change the sequence for these columns as follows:

- Type ***5*** for the CURR_MAT_DT column.
- Type ***4*** for CURR_LOAN_STAT column.
- Type ***6*** for the AMT column.
- Type ***7*** for the OUT_PRIN_BAL column.
- Type ***1*** for the CURR_LEN_CODE column.
- Type ***2*** for the SCH_CODE column.
- Type ***3*** for the STU_NO column.

Whenever you want to see the effects of a change to the form, press the **REPORT** key. View the results and then press the **FORM** key to make more changes.

The effects of these changes on our report are shown in Figure 5–69.

```
REPORT                                          LINE 1      POS 1      79


  CURR                        CURR  CURR                          OUT
  LEN     SCH             STU LOAN  MAT                         PRIN
  CODE    CODE            NO  STAT   DT              AMT         BAL
  ------  ------  ----------  ----  ----------  -----------  -----------
  800241  001002   547009986  RP    1992-08-21         4000            0
  899986  001002   122001636  RP    1988-07-01         2500            0
  899986  001002   122001636  RP    1988-07-01         2500            0
  899986  001002   122002066  RP    1990-12-01         1200            0
  899986  001005   207003128  RP    1992-11-01         1147            0
  899986  001005   207003128  RP    1992-11-01         1479            0
  899986  001020    37001495  RP    1988-10-01         2500            0
  899986  001020    37001495  RP    1988-10-01         2275            0
  899986  001033    37000489  RP    1992-12-01         2500            0
  899986  001033    37000515  RP    1990-01-01         4000            0
  899986  001033    37000791  RP    1984-03-01         2500            0
  899986  001033    37001379  RP    1987-04-09         2500            0
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, REPORT is displayed.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–69, Report Panel Displaying the Results of Column Sequence Change

5.5.5 Changing Column Headings

The COLUMN HEADING column on the *Form.Columns* panel displays unique names constructed by QMF. Usually, this is the column name from the table. You can change the column headings displayed in your report by changing these names.

QMF determines the default column names from the database. In many cases, you may want to edit these so more meaningful column names are contained in your report.

- Press the **FORM** key to display the *Form.Columns* panel.

If you press the FORM key from the *Report* panel, you are returned to the most recently displayed *Form* panel; in this case, the *Form.Columns*.

- Type ***LOAN_MAT*** over CURR_MAT_DT in column 1.
- Type ***ST*** for column 2.
- Type ***LOAN_AMT*** for column 3.
- Type ***OUT_PRIN*** for column 4.
- Type ***LEN*** for column 5.
- Press the **REPORT** key.

The underscore (_) tells QMF to stack the words separated by the underscore on top of one another in the column. The revised Form is shown in Figure 5–70, and the effect of these changes on our report is shown in Figure 5–71.

```
FORM.COLUMNS                                          MODIFIED

                      Total Width of Report Columns: 73
 NUM COLUMN HEADING                            USAGE   INDENT WIDTH EDIT  SEQ
 --- ----------------------------------------- ------- ------ ----- ----- ---
   1 LOAN_MAT                                          2      10    TDY-  5
   2 ST                                                2      4     C     4
   3 LOAN_AMT                                          2      11    L     6
   4 OUT_PRIN                                          2      11    L     7
   5 LEN                                               2      6     C     1
   6 SCH_CODE                                          2      6     C     2
   7 STU_NO                                            2      11    L     3
     *** END ***



1=Help     2=Check    3=End          4=Show          5=Chart         6=Query
7=Backward 8=Forward  9=Specify     10=Insert       11=Delete       12=Report
OK, FORM is displayed.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–70, Form.Columns Panel with Column Heading Changes

```
REPORT                                            LINE 1      POS 1      79



          SCH              STU        LOAN              LOAN         OUT
  LEN     CODE              NO   ST   MAT               AMT          PRIN
  ------  ------  -----------  ----  ----------  -----------  -----------
  800241  001002    547009986  RP    1992-08-21         4000            0
  899986  001002    122001636  RP    1988-07-01         2500            0
  899986  001002    122001636  RP    1988-07-01         2500            0
  899986  001002    122002066  RP    1990-12-01         1200            0
  899986  001005    207003128  RP    1992-11-01         1147            0
  899986  001005    207003128  RP    1992-11-01         1479            0
  899986  001020     37001495  RP    1988-10-01         2500            0
  899986  001020     37001495  RP    1988-10-01         2275            0
  899986  001033     37000489  RP    1992-12-01         2500            0
  899986  001033     37000515  RP    1990-01-01         4000            0
  899986  001033     37000791  RP    1984-03-01         2500            0
  899986  001033     37001379  RP    1987-04-09         2500            0
  899986  001033     37001406  RP    1990-01-01         2500            0
1=Help        2=            3=End       4=Print      5=Chart       6=Query
7=Backward    8=Forward     9=Form     10=Left      11=Right      12=
OK, REPORT is displayed.
COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–71, Report Panel Displaying the Changed Column Headings

5.5.6 Changing the Report Width

At the top of the *Form.Columns* panel, a centered line is displayed that tells you the total width of your report in number of characters. In this example, the total width of report columns equals 73. This means that the report is 73 characters wide.

You cannot change the total width of report columns directly; but you can change USAGE, INDENT, or WIDTH for any column. When you press **ENTER**, the new total width of report columns (in characters) is computed and displayed on the centered line at the top of the panel.

5.5.7 Changing Column Widths and Space Between Columns

Continuing with our example report transformation on the *Form.Columns* panel:

- Press the **FORM** key to return to *Form.Columns* panel.
- Pressing **TAB** twice or **ENTER** moves your cursor to the first line.
- Press **TAB** two times to position the cursor under the WIDTH column, and use your directional keys to choose the row.
- Type ***2***, to change the column WIDTH for the ST column to two characters. The numbers can be overtyped.

The INDENT column sets the number of blank spaces to the left of a column. These spaces separate the data in this column from the preceding column or the left margin.

- Position your cursor as you did for changing the WIDTH.

- Type ***4***, to change the value of INDENT for the ST and SCH_CODE columns to 4. This improves the appearance of the report.

- Press the **REPORT** key to display the report. Previewing the report lets you be certain the layout fits yours need.

5.5.8 Changing Data and Column Heading Alignment

The placement of the cursor in the *Form.Columns* panel determines which column appears when the *Alignment* panel is selected. For example, if the cursor is positioned on the LOAN_AMT option line when the **SPECIFY** key is pressed, the LOAN_AMT column heading name is displayed on the *Alignment* panel. From there, the **PREVIOUS COLUMN** or **NEXT COLUMN** key can be used to change the alignment of other column headings or data in your report.

If the cursor is positioned at the "Command" prompt when you press the **SPECIFY** key, the first column of your *Form.Columns* panel is displayed when you get to the *Alignment* panel.

To continue creating our example report from the *Form.Columns* panel shown in Figure 5–70,

- Press the **SPECIFY** key at the "Command" prompt.

The **SPECIFY** panel displays (Figure 5–72).

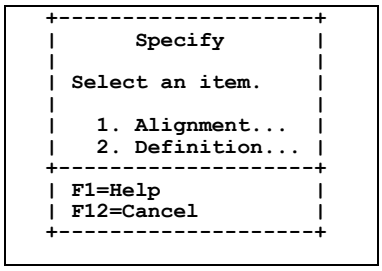

Figure 5–72, Specify Panel

- Type ***1***, to select the ALIGNMENT option from the *Specify* panel.
- Press **ENTER**.

The *Alignment* panel displays over the *Form.Columns* panel (Figure 5–73).

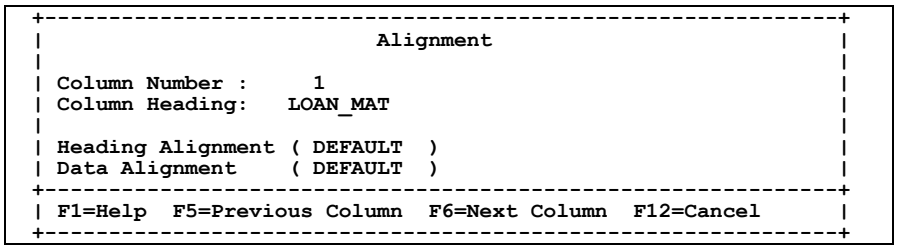

Figure 5–73, Alignment Panel

To bypass the *Specify* panel, type *SPECIFY ALIGNMENT* at the *Form.Columns* "Command" prompt and press ENTER. The SPECIFY (PF9) key is active on the *Form.Columns* panel only.

Optional alignment values on the *Alignment* panel include the following: LEFT, CENTER, RIGHT, and DEFAULT. To center each of the column headings in our example:

- Type ***CENTER*** directly over the default value for Heading Alignment. Do not press **ENTER** until all desired column headings have been changed.
- Press the **NEXT COLUMN** key to make the ST column the focus of the *Alignment* panel.
- Type ***CENTER*** over the default value for Heading Alignment.
- Press the **NEXT COLUMN** key and type ***CENTER*** over the Heading Alignment value, following this sequence for the remaining columns.
- Press **ENTER** after making the last desired change to the STU_NO column. The *Alignment* panel is removed.
- Press the **CANCEL** key to exit the *Specify* panel.
- Press the **REPORT** key to display the revised report shown in Figure 5–74. Notice that all the column headings are now centered above the columns.

```
REPORT                                              LINE 1      POS 1      79


            SCH         STU                LOAN         LOAN          OUT
   LEN      CODE        NO           ST    MAT          AMT           PRIN
  ------    ------   -----------     --  ----------  -----------  -----------
  800241    001002     547009986     RP  1992-08-21         4000            0
  899986    001002     122001636     RP  1988-07-01         2500            0
  899986    001002     122002066     RP  1990-12-01         1200            0
  899986    001002     122001636     RP  1988-07-01         2500            0
  899986    001005     207003128     RP  1992-11-01         1479            0
  899986    001005     207003128     RP  1992-11-01         1147            0
  899986    001020      37001495     RP  1988-10-01         2500            0
  899986    001020     122002546     DU  1988-12-01         2500            0
  899986    001020     122002546     DU  1988-12-01         1137            0
  899986    001020      37001495     RP  1988-10-01         2275            0
  899986    001033      37000065     DU  1989-01-01         2500            0
  899986    001033      37000466     DB  1987-06-30         2500            0
  899986    001033      37000489     RP  1992-12-01         2500            0
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form      10=Left       11=Right       12=
OK, REPORT is displayed.
COMMAND ===>                                                  SCROLL ===> PAGE
```

Figure 5–74, Report Panel Displaying Centered Column Headings

5.5.9 Determining the Way Columns Are Punctuated

Edit codes determine how values in a column are punctuated, if at all. Numeric edit codes (L, D, P, and K) can be followed by a number signifying the scale for that edit code–the number of decimal places to be used for that data. This number can range from 0 to 99. For example, L2 means to display a numeric value using the L edit code, allowing two digits after a decimal. Some common edit codes are described below:

C	**Character Data**	Specifies no punctuation.
L	**Numeric Data**	Specifies decimal points and negative signs, if they occur.
D	**Numeric Data**	Specifies dollar signs ($) and separators (,) for groups of three digits, as well as decimal points and negative signs that occur.
P	**Numeric Data**	Specifies numeric data as a percentage using the "%" symbol, as well as decimal points and negative signs that occur.
K	**Numeric Data**	Supplies a minus sign for negative values, separators (,) for groups of three digits, and decimal placement.

The column labeled EDIT on the *Form.Columns* panel contains edit codes for report columns. In this example, edit codes were changed to format data in the LOAN_AMT and OUT_PRIN columns in dollar amounts. The edit code for those columns was changed to ***D2***. Figure 5–75 shows the results of these changes.

```
REPORT                                          LINE 1      POS 1      79



           SCH        STU                 LOAN        LOAN          OUT
   LEN     CODE       NO          ST      MAT          AMT          PRIN
  ------  ------  -----------     --   ----------  -----------  -----------
  800241  001002    547009986     RP   1992-08-21    $4,000.00        $0.00
  899986  001002    122001636     RP   1988-07-01    $2,500.00        $0.00
  899986  001002    122001636     RP   1988-07-01    $2,500.00        $0.00
  899986  001002    122002066     RP   1990-12-01    $1,200.00        $0.00
  899986  001005    207003128     RP   1992-11-01    $1,147.00        $0.00
  899986  001005    207003128     RP   1992-11-01    $1,479.00        $0.00
  899986  001020     37001495     RP   1988-10-01    $2,500.00        $0.00
  899986  001020     37001495     RP   1988-10-01    $2,275.00        $0.00
  899986  001033     37000489     RP   1992-12-01    $2,500.00        $0.00
  899986  001033     37000515     RP   1990-01-01    $4,000.00        $0.00
  899986  001033     37000791     RP   1984-03-01    $2,500.00        $0.00
  899986  001033     37001379     RP   1987-04-09    $2,500.00        $0.00
  899986  001033     37001406     RP   1990-01-01    $2,500.00        $0.00
1=Help         2=           3=End        4=Print       5=Chart        6=Query
7=Backward     8=Forward    9=Form      10=Left       11=Right       12=
OK, REPORT is displayed.
COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–75, Report Panel Displaying Columns with Dollar Amounts

If the column width is too narrow for the output to format, an asterisk (*) is displayed instead of data. If this occurs, return to the *Form.Columns* panel and increase the column's width.

5.5.10 Determining the Way Columns Are Used

Usage codes tell QMF how to use a column. The simplest use for a column of data is to present it as displayed or printed; the usage code for that is blank. If you do not want the column to display in your report, use ***OMIT*** as the usage code.

A common way to use data in a column of numbers is add its values. The usage code for adding is ***SUM***, which displays the column and adds the values, showing the total number result at the bottom of the column.

- Press the **FORM** key to return to the *Form.Columns* panel.
- Type ***SUM*** under the USAGE column for the LOAN_AMT and OUT_PRIN column headings to add their column values together.
- Press the **REPORT** key to see how the usage code affected the report.
- Type ***BOTTOM*** and press **ENTER** to advance to the end of the report and view the column totals.

A revised report displaying totals for LOAN_AMT and OUT_PRIN is shown in Figure 5–76.

```
REPORT                                              LINE 1043   POS 1      79

            SCH          STU             LOAN          LOAN            OUT
    LEN     CODE          NO         ST   MAT            AMT            PRIN
 ++------++------++++----------++--++----------++--------------++------------+
   899986  023260       37000318  RP  1992-10-01        $2,300.00         $0.00
   899986  023260       37000316  RP  1992-06-01        $1,950.00         $0.00
   899986  024605      122001641  RP  1989-03-01        $5,000.00         $0.00
   899986  024605      122001641  RP  1989-03-01        $5,000.00         $0.00
   899986  024605      122001641  RP  1990-03-01        $7,500.00         $0.00
   899986  024605      122001641  RP  1989-03-01        $5,000.00         $0.00
   899986  024618       37001289  RP  1991-01-01        $5,000.00         $0.00
   899986  024714      122002531  RP  1988-12-01        $2,500.00         $0.00
   899986  024714      122002531  RP  1986-05-01        $2,500.00         $0.00
   899986  024984       37000321  RP  1992-11-01        $2,625.00         $0.00
                                                      ==============  ============
                                                     $2,877,596.00         $0.00


 *** END ***
 1=Help         2=             3=End       4=Print       5=Chart        6=Query
 7=Backward     8=Forward      9=Form     10=Left       11=Right       12=
 OK, REPORT is displayed.
 COMMAND ===>                                                  SCROLL ===> PAGE
```

Figure 5–76, Report Panel Displaying Totals

SUM is an aggregating usage code. Some other aggregating usage codes include the following:

Usage	Results In
AVERAGE (AV)	The average of the values in the column.
CALCid (CAid)	The evaluation of a report calculation specified for a numeric ID on the *Form.Calc* panel.
COUNT (CO)	A count of the values in the column that are not null.
CSUM (CS)	The cumulative total for each line of the report.
MAXIMUM (MA)	The largest value in the column.
MINIMUM (MI)	The smallest value in the column.
PCT (P)	The percentage each line represents of the total for the column in the report.

For a listing of all QMF usage codes, refer to the *QMF Help* panels.

The minimum abbreviations for the usage codes are shown in parentheses. If you type the abbreviation, QMF fills in the rest when you press ENTER. Of the codes listed, AVERAGE, CSUM, PCT, and SUM are used for numeric data only. CALCid, COUNT, MAXIMUM, and MINIMUM can also be used for character data.

5.5.11 Breaking Your Report into Smaller Sections

Dividing your report into smaller, more readable sections makes it easier to use and understand. Use the *Form.Columns* panel to specify those section breaks.

5.5.11.1 Using Break Usage Codes

To include subtotals in the report, you need to tell QMF where to make the breaks in the report. In this example, breaks are used to divide the report after each Lender code and to provide a Lender Code Total. The rows are sorted by Lender Number. The query retrieves rows from the table in this order.

The ordering of data is crucial in a report. If the data is sorted by Lender Code, you can view Lender totals by using the BREAK usage code. The BREAK code tells QMF to "Show a result (a lender total) whenever the value of the Lender Code column changes."

When a subtotal is shown each time the value in the Lender Code column changes, it is called a control break. The column in which the control break occurs is called the control column. The usage code for such a control column is BREAKn (where n is any number from 1 through 6). This example presents only the level 1 control break.

To display LENDER totals by using BREAK1 as the usage code for the LEN column:

- Press the **FORM** key to display the Form.Columns panel.
- Type ***BREAK1*** as the usage code for the LEN column.
- Press the **REPORT** key to view the revised report shown in Figure 5–77.

```
REPORT                                        LINE 1      POS 1      79

             SCH        STU                LOAN          LOAN           OUT
   LEN       CODE       NO          ST     MAT           AMT            PRIN
  ------    ------   -----------    --   ----------   ---------------  -----------
  800241    001610    547009986     RP   1992-08-21        $4,000.00        $0.00
                                                      ---------------  -----------
                                                 *         $4,000.00        $0.00

  899986    001002    122001636     RP   1988-07-01        $2,500.00        $0.00
            001002    122001636     RP   1988-07-01        $2,500.00        $0.00
            001002    122002066     RP   1990-12-01        $1,200.00        $0.00
            001005    207003128     RP   1992-11-01        $1,479.00        $0.00
            001005    207003128     RP   1992-11-01        $1,147.00        $0.00
            001020     37001495     RP   1988-10-01        $2,500.00        $0.00
            001020     37001495     RP   1988-10-01        $2,275.00        $0.00
            001033     37000489     RP   1992-12-01        $2,500.00        $0.00
            001033     37000515     RP   1990-01-01        $4,000.00        $0.00
1=Help        2=          3=End        4=Print       5=Chart        6=Query
7=Backward    8=Forward   9=Form      10=Left       11=Right       12=
OK, REPORT is displayed.
COMMAND ===>                                                  SCROLL ===> PAGE
```

Figure 5–77, Report Panel Displaying Results of BREAK Command

5.5.11.2 Default Break Text on *Form.Main*

The "Default Break Text?" prompt lets you change the default text that displays at each break in your report. If you do not specify any footing text for your break levels, the default break text is an asterisk. To suppress display of the asterisks:

- Type ***SHOW FORM.MAIN*** at the "Command" prompt of your report.
- Press **ENTER**. The *Form.Main* panel displays (Figure 5–78).

```
FORM.MAIN         ED0.STUDENT_F                   MODIFIED

 COLUMNS:                Total Width of Report Columns: 77
  NUM COLUMN HEADING                          USAGE   INDENT WIDTH EDIT  SEQ
  --- --------------------------------------- ------- ------ ----- ----- ---
    1 LOAN_MAT                                        2      10    TDY-  5
    2 ST                                              4      2     C     4
    3 LOAN_AMT                                SUM     2      15    D2    6
    4 OUT_PRIN                                SUM     2      11    D2    7
    5 LEN                                     BREAK1  2      6     C     1

 PAGE:    HEADING  ===>
          FOOTING  ===>
 FINAL:   TEXT     ===>
 BREAK1:  NEW PAGE FOR BREAK? ===> NO
          FOOTING  ===>
 BREAK2:  NEW PAGE FOR BREAK? ===> NO
          FOOTING  ===>
 OPTIONS: OUTLINE? ===> YES               DEFAULT BREAK TEXT? ===> YES

 1=Help     2=Check    3=End         4=Show         5=Chart         6=Query
 7=Backward 8=Forward  9=           10=Insert      11=Delete       12=Report
 OK, FORM.MAIN is shown.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–78, Form.Main Panel

- Type ***NO*** at the "Default Break Text" prompt on the *Form.Main* panel.

5.5.11.3 Entering Break Text

The *Form.Main* panel lets you specify whether to begin a new page for each break level, and enter explanatory text for these break results. For this report, assume you do not want a new page for the break, but you do want to add explanatory text to the break totals. The break text is displayed whenever the value in the control column changes.

To identify each total with the line LENDER TOTALS, for BREAK1:

- Type ***NO*** at the "New Page For Break?" prompt.
- Type ***LENDER TOTALS*** at the "Footing" prompt.
- Press the **REPORT** key.

The revised report is displayed (Figure 5–79). Notice the format changes. The text is displayed at each subtotal in the report.

```
REPORT                                          LINE 1      POS 1      79



            SCH        STU             LOAN          LOAN            OUT
   LEN      CODE       NO        ST    MAT            AMT            PRIN
   ------   ------  -----------  --  ----------  ---------------  -----------
   800241   001610    547009986  RP  1992-08-21        $4,000.00        $0.00
                                                  ---------------  -----------
                                  LENDER TOTALS        $4,000.00        $0.00

   899986   001002    122001636  RP  1988-07-01        $2,500.00        $0.00
            001002    122001636  RP  1988-07-01        $2,500.00        $0.00
            001002    122002066  RP  1990-12-01        $1,200.00        $0.00
            001005    207003128  RP  1992-11-01        $1,479.00        $0.00
            001005    207003128  RP  1992-11-01        $1,147.00        $0.00
            001020     37001495  RP  1988-10-01        $2,500.00        $0.00
            001020     37001495  RP  1988-10-01        $2,275.00        $0.00
            001033     37000489  RP  1992-12-01        $2,500.00        $0.00
            001033     37000515  RP  1990-01-01        $4,000.00        $0.00
 1=Help         2=            3=End       4=Print       5=Chart        6=Query
 7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
 OK, REPORT is displayed.
 COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–79, Report Panel Displayed with LENDER TOTALS

- Press the FORM key to return to *Form.Main* panel.

If you want something a little fancier, use a variable Lender code to display in the control break text. For that, enter the special symbol "&5", which means "the current value in column 5," the LEN column. Whenever the computer displays the control break text that includes "&5", it substitutes for "&5" the latest value in column 5. For example, the first instance of break text in this report would be LENDER 800241 TOTALS.

To create this kind of break text:

- Type ***NO*** at the BREAK1 “New Page For Break?” prompt.
- Type ***LENDER &5 TOTALS*** at the BREAK1 “Footing” prompt.

Remember, you can use the FORWARD key on *Form.Main* panel if you want to view other columns.

Press the **REPORT** key.

The revised report is displayed (Figure 5–80). Notice the change to the subtotal text. The Lender Code is now displayed in the break text.

```
REPORT                                             LINE 1      POS 1      79



                SCH         STU                 LOAN          LOAN            OUT
   LEN          CODE        NO          ST      MAT           AMT             PRIN
  ------      ------  -----------       --  ----------  ---------------  -----------
  800241      001610    547009986       RP  1992-08-21        $4,000.00        $0.00
                                                        ---------------  -----------
                             LENDER 800241 TOTALS             $4,000.00        $0.00

  899986      001002    122001636       RP  1988-07-01        $2,500.00        $0.00
              001002    122001636       RP  1988-07-01        $2,500.00        $0.00
              001002    122002066       RP  1990-12-01        $1,200.00        $0.00
              001005    207003128       RP  1992-11-01        $1,479.00        $0.00
              001005    207003128       RP  1992-11-01        $1,147.00        $0.00
              001020     37001495       RP  1988-10-01        $2,500.00        $0.00
              001020     37001495       RP  1988-10-01        $2,275.00        $0.00
              001033     37000489       RP  1992-12-01        $2,500.00        $0.00
              001033     37000515       RP  1990-01-01        $4,000.00        $0.00
1=Help         2=            3=End        4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form      10=Left       11=Right       12=
OK, REPORT is displayed.
COMMAND ===>                                                   SCROLL ===> PAGE
```

Figure 5–80, Report Panel Displaying Lender Code in BREAK Text

- Press the FORM key to return to the *Form.Main* panel.

5.5.12 Page Headings and Footings and Final Text

5.5.12.1 Headings and Footings

Many times it is necessary for final output reports to include a page heading or a page footing text. You can specify either, both, or neither.

Use these areas on the *Form.Main* panel:

PAGE: HEADING ===>
FOOTING ===>

Heading and footing text lines display at the top or bottom of each page of a printed report, or before the first and after the last line of a report displayed at a PC.

- Press the **FORM** key to return to the *Form.Main* panel.

To add page heading and footing text to your report, follow these steps on the *Form.Main* panel:

- Type ***OUTSTANDING PRINCIPLE < 100*** at the "Heading" prompt.
- Type ***COMPANY CONFIDENTIAL*** at the "Footing" prompt.

If you want more than a single heading or footing in your report, or if you want to adjust the alignment of the heading and footing, use the *Form.Page* panel. Page heading and footing text entered on the *Form.Main* panel also is displayed on the *Form.Page* panel.

- Type ***SHOW FORM.PAGE*** at the "Command" prompt.
- Press **ENTER**. The *Form.Page* panel displays (Figure 5–81).

```
FORM.PAGE          ED0.STUDENT_F                      MODIFIED

 Blank Lines Before Heading ===> 0       Blank Lines After Heading ===> 2
 LINE  ALIGN   PAGE HEADING TEXT
 ----  ------  ----+----1----+----2----+----3----+----4----+----5----+
 1     CENTER  OUTSTANDING PRINCIPLE <100
 2     CENTER
 3     CENTER
 4     CENTER
               *** END ***

 Blank Lines Before Footing ===> 2       Blank Lines After Footing ===> 0
 LINE  ALIGN   PAGE FOOTING TEXT
 ----  ------  ----+----1----+----2----+----3----+----4----+----5----+
 1     CENTER  COMPANY CONFIDENTIAL
 2     CENTER
 3     CENTER
 4     CENTER
               *** END ***

 1=Help     2=Check   3=End          4=Show          5=Chart          6=Query
 7=Backward 8=Forward 9=            10=Insert       11=Delete        12=Report
 OK, FORM.PAGE is shown.
 COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–81, Form.Page Panel

The *Form.Page* panel lets you:

1. **Specify the text for the page heading and footing lines on your report.**

2. **Control the placement of the page heading and footing (CENTER, LEFT, RIGHT, or APPEND).**

3. **Indicate the number of blank lines that are displayed before and after page heading and footing text.**

- Type ***SHOW FORM.MAIN*** at the “Command” prompt.
- Press **ENTER**. You are returned to the *Form.Main* panel.

5.5.12.2 Final Text

Final Text is text that you want displayed at the end of the report; such as descriptive final summary data. Use the following procedure to create Final Text from the *Form.Main* panel:

- Type ***TOTALS*** at the “Text” prompt.
- Press the **REPORT** key.

The revised report is displayed (Figure 5–82). Notice the change to the heading.

```
REPORT                                          LINE 1      POS 1      79

                           OUTSTANDING PRINCIPLE <100


              SCH        STU                   LOAN          LOAN           OUT
   LEN        CODE       NO          ST        MAT           AMT            PRIN
   ------     ------   -----------   --    ----------   ---------------  -----------
   800241     001610    547009986    RP    1992-08-21         $4,000.00        $0.00
                                                        ---------------  -----------
                              LENDER 800241  TOTALS           $4,000.00        $0.00

   899986     001002    122001636    RP    1988-07-01         $2,500.00        $0.00
              001002    122001636    RP    1988-07-01         $2,500.00        $0.00
              001002    122002066    RP    1990-12-01         $1,200.00        $0.00
              001005    207003128    RP    1992-11-01         $1,479.00        $0.00
              001005    207003128    RP    1992-11-01         $1,147.00        $0.00
              001020     37001495    RP    1988-10-01         $2,500.00        $0.00
              001020     37001495    RP    1988-10-01         $2,275.00        $0.00
              001033     37000489    RP    1992-12-01         $2,500.00        $0.00
 1=Help         2=           3=End        4=Print       5=Chart        6=Query
 7=Backward     8=Forward    9=Form      10=Left       11=Right       12=
 OK, REPORT is displayed.
 COMMAND ===>                                                  SCROLL ===> PAGE
```

Figure 5–82, Report Panel with Heading Displayed

- Press the **FORWARD** key several times to display the final total line and footing as shown in Figure 5–83.

```
REPORT                                          LINE 1052   POS 1      79

             SCH        STU              LOAN          LOAN           OUT
   LEN       CODE       NO          ST   MAT           AMT            PRIN
 ++------++----++-----------++--++----------++---------------++-----------
  899986    024605    122001641    RP  1989-03-01        $5,000.00        $0.00
            024605    122001641    RP  1989-03-01        $5,000.00        $0.00
            024618     37001289    RP  1991-01-01        $5,000.00        $0.00
            024714    122002531    RP  1988-12-01        $2,500.00        $0.00
            024714    122002531    RP  1986-05-01        $2,500.00        $0.00
            024984     37000321    RP  1992-11-01        $2,625.00        $0.00
                                                       ---------------  -----------
                          LENDER 899986 TOTALS    $2,877,596.00        $0.00

                                                   ===============  ===========
                                        TOTALS     $2,881,596.00        $0.00


                          COMPANY CONFIDENTIAL
*** END ***
1=Help         2=             3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward      9=Form     10=Left       11=Right       12=
OK, FORWARD performed. Please proceed.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–83, Report Panel Displaying Footing and Final Totals

- Press the FORM key to return to *Form.Main* panel.

5.5.13 Outline Option on *Form.Main*

The OUTLINE option on the *Form.Main* panel lets you suppress repeated values in control columns. If your report has control breaks, notice the value in the control break column is not repeated for each line in the report (see Figure 5–82, Figure 5–83, and Figure 5–84). If the response after the "Outline" prompt is ***YES*** on the *Form.Main* panel, the value is displayed only once. If you typed ***NO*** at this prompt, the value is repeated for each row.

```
FORM.MAIN          ED0.STUDENT_F                        MODIFIED

COLUMNS:               Total Width of Report Columns: 79
 NUM COLUMN HEADING                              USAGE   INDENT WIDTH EDIT  SEQ
 --- ------------------------------------------- ------- ------ ----- ----- ---
   1 LOAN_MAT                                            2      10    TDY-  5
   2 ST                                                  4      2     C     4
   3 LOAN_AMT                                    SUM     2      15    D2    6
   4 OUT_PRIN                                    SUM     2      11    D2    7
   5 LEN                                         BREAK1  2      6     C     1

PAGE:    HEADING  ===> OUTSTANDING PRINCIPLE <100
         FOOTING  ===> COMPANY CONFIDENTIAL
FINAL:   TEXT     ===> TOTALS
BREAK1:  NEW PAGE FOR BREAK? ===> NO
         FOOTING  ===> LENDER &5 TOTALS
BREAK2:  NEW PAGE FOR BREAK? ===> NO
         FOOTING  ===>
OPTIONS: OUTLINE? ===> YES                DEFAULT BREAK TEXT? ===> NO

1=Help     2=Check    3=End          4=Show          5=Chart         6=Query
7=Backward 8=Forward  9=            10=Insert       11=Delete       12=Report
OK, FORM is displayed.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–84, Form.Main Panel

Leave the default value of YES for this report. Otherwise, your report lists the LENDER number beside each row in the report.

You have now finished making the necessary modifications to the form.

5.5.14 Saving a Form

After you have created the form, you may want to save it for later use. If you forget to save the form and run another query, QMF does not keep a copy of your form to use later. The form is lost and replaced by the default form from the query you last ran.

5.5.14.1 Naming Restriction

Forms can be stored in the database with specific names. The name you use should be similar to the query name so it is easier to recognize which form goes with which query. A form can be saved from any QMF "Command" prompt. A Query and Form cannot have the same name.

- Type ***SAVE FORM ?*** at the "Command" prompt.
- Press **ENTER**.

QMF displays the *Save Command Prompt* panel (Figure 5–85).

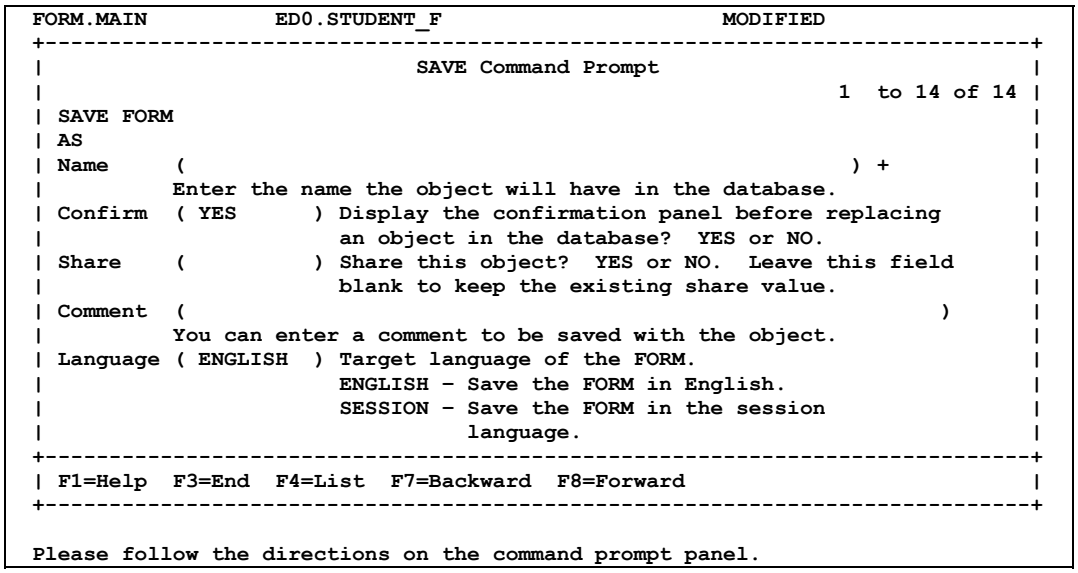

Figure 5–85, Save Form Panel

Use the first blank for the form name. This is the name to use when you recall the form.

- Type ***FORMS_F*** and press **ENTER**.

5.5.14.2 Naming Conventions

Refer to Section 5.2.12, Naming Conventions, for more information about naming your QMF query.

5.5.15 Using the RUN Command

The RUN command executes queries, forms, or procedures from temporary storage without having to display the Query, Form, or Procedure.

5.5.15.1 RUN Command with No Options

Previously, we ran a saved query using the RUN command. When we ran the query, QMF used the default Form to display the results.

- Type ***RUN FORMS_Q*** at the "Command" prompt.
- Press **ENTER**.

Notice the saved query is displayed and the data is returned in the default report format.

5.5.15.2 DISPLAY Command after the RUN Command

QMF allows you to specify the format to use in the report after the query is run. You can use the DISPLAY command to recall a previously saved form.

- Type ***DISPLAY FORMS_F*** at the "Command" prompt or use the short form ***DI FORMS_F***.
- Press **ENTER**.
- Press the **REPORT** key.

The report is now in the saved form format.

5.5.15.3 RUN Command with FORM Option

It is possible to run the query and display a saved form in one step by using the RUN command. The command syntax is RUN followed by queryname (FORM = formname).

- Type ***RUN FORMS_Q (FORM = FORMS_F*** or ***(F=FORMS_F*** at the "Command" prompt.
- Press **ENTER**.

Notice the saved query has been run, and the data is returned using the saved form rather than the default report format.

5.5.16 Using the LIST Command

You have used the LIST QUERIES command to view a list of all the queries you have saved in QMF. You can also use the LIST command to list all the forms you have saved. Just replace the word "queries" with "forms" (i.e., LIST FORMS). You can also use the LIST command to display both queries and forms in the same list.

- Type ***LIST ALL*** at the "Command" prompt.
- Press **ENTER**.

A list of every QMF item you have saved is displayed (Figure 5–86). The TYPE column tells you whether the saved object is a Table, Query, or Form.

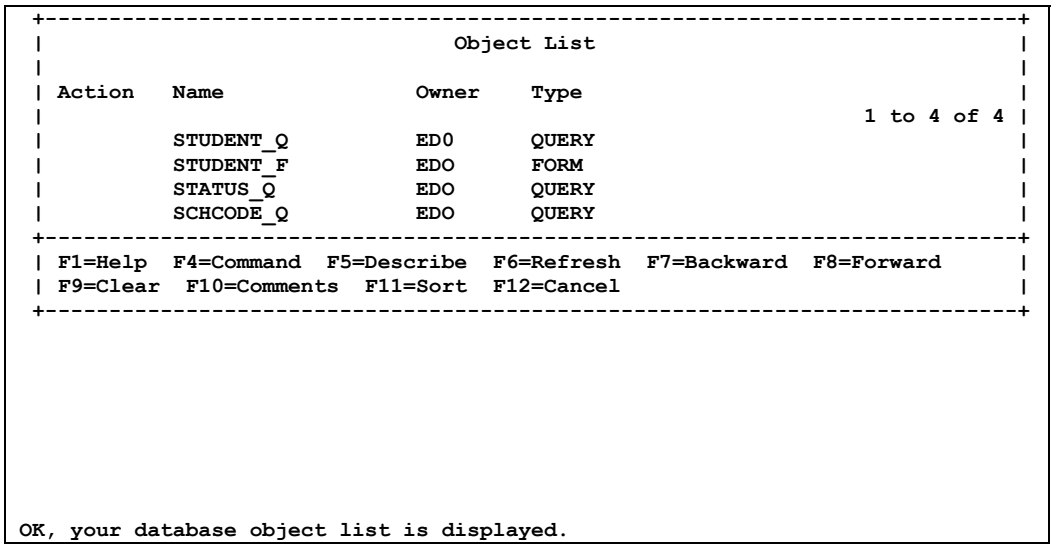

Figure 5–86, Object List from LIST ALL Command

- Press the **CANCEL** key to return to the report.

To list everything beginning with 'T':

- Type ***LIST (NAME=T%*** at the "Command" prompt.
- Press **ENTER**.
- Press the **CANCEL** key to return to the report.

To list other users shared queries:

- Type ***LIST QUERIES (OWNER=ALL***, or use the short form ***LIST QUERIES (O-ALL***.
- Type ***LIST QUERIES (OWNER=USERID***.

5.5.17 Printing a Report

QMF can send your QMF report to a printer, RMDS, diskette, magnetic tape, Title IV WAN, or a dataset for downloading to a PC.

QMF reports can be routed to the designated output any one of three ways:

1. Press the **PRINT** key from the Report panel.
2. Select output destination by putting an 'S' beside the destination chosen.
3. Type ***QPRINT*** at the Report panel's "Command" prompt or through a procedure.

Or, you can use the BATCH facility to print a QMF report as described in Section 5.6.11.3.

5.5.17.1 PRINT Key

While the report is displayed on the screen, press the **PRINT** key. QMF displays the Select Output Destination panel (Figure 5–87).

```
Menu  Options  View  Utilities  Compilers  Help

 DSLIST - Data Sets Matching NSLDSD.PRB79*                  Data Set - Browsed
 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 ---------------------- SELECT OUTPUT DESTINATION  ----------- Row 1 to 8 of 8
 COMMAND==>                                                  SCROLL==>  PAGE

 REPORT ID      ==>                                        03/29 15:31
 REMOTE PRINTER ==>

 S  PRINTER   DEF   DESCRIPTION
 .  WAN             SEND TO T4 WAN MAILBOX
 .  DISKETTE        OUTPUT TO PC DISKETTE
 .  DOWNLOAD        DOWNLOAD TO PC FILE
 .  HP683           NSLDS CUSTOMER SERVICE CENTER
 .  L3800           VIRTUAL DATA CENTER HIGH SPEED PRINTER
 .  RMDS            ON-LINE REPORT DISPLAY
 .  RMT201          FALLS CHURCH DEVELOPMENT OFFICE
 .  TAPE            OUTPUT TO MAGNETIC TAPE
 ****************************** Bottom of data ********************************



  F1=HELP      F2=SPLIT     F3=END       F4=QPRINT    F5=          F6=
  F7=UP        F8=DOWN      F9=SWAP      F10=         F11=     F12=RETRIEVE
```

Figure 5–87, Select Output Destination Panel

5.5.17.2 Output Destination Panel

The *Select Output Destination* panel displays a list of destinations. Those destinations are defined by User ID and vary from user to user, so you may not be able to send a report to all the destinations described below.

- **RMDS**—Report Management and Distribution System (RMDS) is an IBM product that provides an intermediate area to view reports before they are routed to a destination. RMDS identifies each report by its report identifier. A report is routed to RMDS by specifying the RMDS print destination and placing the report identifier in the FORM field on the output menu from CICS or QMF. From RMDS, a user can send a copy of a report to any of the other valid report destinations. Except for printer output, any report routed out of RMDS is placed in a dataset for further processing. RMDS is accessible from a TSO or VTAM session.

- **PC Download**—Output to be downloading to a user's PC is stored in separate datasets on the NSLDS mainframe. Those data sets are differentiated from other distribution datasets by a naming standard which includes the userid in the data set name. When users download from Personal Communications/3270 or Crosstalk for Windows, they specify the data set name as the source for the download. These files begin with NSLPC.userid.

- **Diskette**—Each report or extract to be distributed on diskette is stored in a separate data set on the mainframe. A naming standard indicates which datasets are to be copied onto diskette. At regular intervals, a diskette distribution process is executed in batch to collect the data sets and transfer them to a dedicated PC. The Output Log table is updated to reflect that the output has been sent to the PC. This diskette distribution process uses the userid, which is imbedded in the dataset name, to read the user name and mailing address from the User Profile table. The name and address are placed at the beginning of the data set before it is transferred to the PC.

- **Magnetic Tape**—The processing for magnetic tape distribution is very similar to the processing for diskettes. A naming standard which requires that the userid of the requester be included in the database name identifies which data sets are to be sent to tape. For each data set, a distribution process reads the "User Profile" table and sends the mailing information to a printer for mailing labels. After the data set is copied to tape and the tape is mailed, a CICS transaction is used to update the "Output Log" table.

The REPORT ID is a four-character identifier based on organization; refer to Section 5.10 for a listing of valid identifiers. QMF prompts you to identify the report when it reaches the given destination. This is required, so you must enter a response.

- Type a ***valid identifier*** at the "Report ID" prompt.
- Select the desired destination by typing ***S*** beside the RMDS option.
- Press **ENTER**.

QMF displays the word "selected" to the right of the option denoting which destination was selected. The selection can be changed by typing ***S*** beside a different destination and pressing **ENTER**. RMDS sends the report to the NSLDS Data Center for printing.

After selecting the destination:

- Type ***QPRINT*** at the "Command" prompt.
- Press **ENTER**.
- Press **END (F3)** from the *Destination* panel, to terminate the output process.
- Press **HELP (F1)** to receive online HELP.
- Press the **END** key to exit the *Output Destination* panel.

5.5.17.3 QPRINT Command

Another way to produce output from the *Report* panel is to use the QPRINT command.

- **QPRINT**—Displays the Output Destination panel just as pressing the REPORT key does.

- **QPRINT dest rptid**—Bypasses the *Select Output Destination* panel and sends the output directly to the desired destination. In this example, replace DEST with the desired destination of the output. RPTID should be replaced with the REPORT ID.

To produce output from the *Report* panel, follow these steps:

- Type ***QPRINT RMDS XXXX*** at the "Command" prompt on the Report panel.
- Press **ENTER**.

Always use the command QPRINT rather than PRINT. The PRINT command does not allow you to select a destination and report ID, but QPRINT does.

5.6 Advanced SQL Queries

5.6.1 Summarizing Data

There are times when you do not need to view all detail records on your report but only summary data. You can create summary reports in QMF using one of two options:

1. The QMF Form panels
2. The SQL Query panel

You may want to select the SQL query method if you are summarizing a large amount of data. For example, if you have written a query that selects 20,000 rows and you want to summarize these rows into a smaller report, it would be better to select just the summarized rows rather than all 20,000 rows and then summarize the data in the form.

5.6.2 Using Forms

To create a summary report from the *QMF Form* panels, use *Form.Main*'s USAGE column.

- Press the **QUERY** key.
- Type ***RESET QUERY*** at the "Command" prompt.
- Press **ENTER**.

Enter the following query at the top of the screen:

```
SELECT    CURR_LEN_CODE, SCH_CODE, AMT
  FROM    LOAN
```

ORDER BY CURR_LEN_CODE, SCH_CODE

We are going to create subtotals in this report based on lender code. Remember, the order is very important when you plan to use the subtotal option in a report. For more information on subtotaling, refer to Section 5.5.11, Breaking your Report into Smaller Sections.

- Press the **RUN** key to produce your default report.
- Press the **FORWARD** key to view other Lender codes (Figure 5–87).

```
REPORT                                          LINE 19     POS 1      79

  CURR
  LEN     SCH
  CODE    CODE            AMT
++------++------++----------++++++++++++++++++++++++++++++++++++++++++++++++++++
  800001  001002         7040
  800001  001002         7040
  800001  001002         7040
  800001  001328        25000
  800001  001328        25000
  800001  001328          100
  800004  001002         7040
  800004  001002         7040
  800004  001002         7040
  800241  001610         4000
  800241  001610         3873
  800241  020988        17418
  801523  001205         5000
  801523  001326         2625
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, FORWARD performed. Please proceed.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–88, Report Panel Displaying Results of the Default Report

5.6.2.1 Summarizing with BREAK

To change the default report options provided by QMF, display the *Form.Main* panel:

- Press the **FORM** key.

Type the specified USAGE codes in the following columns:

- Type ***BREAK*** in the CURR_LEN_CODE column.
- Type ***AVG*** in the AMT column.

The BREAK usage code displays a subtotal whenever the value of the control column changes. The AVG usage code displays the average for the specified column at the end of the report and for each value within the BREAK column.

- Press the **REPORT** key to display the revised report.

- Press the **FORWARD** key twice to view the effect of breaks and average data (Figure 5–89).

```
REPORT                                          LINE 33     POS 1      79

   CURR
   LEN      SCH
   CODE     CODE             AMT
 ++------++------++-----------++++++++++++++++++++++++++++++++++++++++++++++++++
   800004   001002          7040
                    -----------
                 *          7040

   800241   001610          4000
            001610          3873
            020988         17418
                    -----------
                 *          8430

   801523   001205          5000
            001326          2625
            001328          2500
            001431          2500
 1=Help          2=            3=End       4=Print       5=Chart        6=Query
 7=Backward      8=Forward     9=Form     10=Left       11=Right       12=
 OK, FORWARD performed. Please proceed.
 COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–89, Report Panel Displaying Results of Break

The report now displays every amount the query selected as well as average amount for each lender. You may further summarize data in your report so only the rows with the lenders' average amounts are displayed. Eliminating details from your current report is described below.

5.6.2.2 Summarizing with GROUP

To return to the *Form.Main* panel:

- Press the **FORM** key.
- Type USAGE code ***GROUP*** in the CURR_LEN_CODE column.

Subtotals are computed when the values in the column specify a change. The GROUP usage code specifies which columns are selected when the subtotals are computed. The GROUP usage code differs from BREAK. BREAK displays all detail values and adds a summary row for each value in the report. GROUP summarizes all the like values into one row and displays only one row per value in the report.

- Press the **REPORT** key to view your revised report.

The report is now much smaller and shows only the subtotal lines. The School code detail records have been eliminated from the report.

5.6.3 Using Queries

We have described how you can summarize report data using a QMF form. Now our discussion moves on to how to use GROUP and AVG in a SQL query just as they have been used in the QMF form.

- Press the **QUERY** key to display the SQL Query panel.

Edit the query as shown:

```
   SELECT   CURR_LEN_CODE, AVG(AMT)
     FROM   LOAN
 GROUP BY   CURR_LEN_CODE
 ORDER BY   CURR_LEN_CODE
```

Average (AVG) is a column function. A column function produces a single value for a group of rows. Average calculates the average of the values in the requested column. The requested column has to be numeric data for AVG to work. Other column functions include:

- **MAX**—Finds the maximum value in a particular column. Applies to all data types.
- **MIN**—Finds the minimum value in a particular column. Applies to all data types.
- **SUM**—Finds the sum of the values in a column. Applies only to numeric data types.
- **COUNT**—Counts the number of rows which satisfy a search condition. Applies to all data types.

A query can have column functions (SUM, AVG, MAX, MIN, and COUNT) applied to groups of rows that have matching values in a column or columns. Rows are GROUPED BY matching values in a column. When a query uses the grouping feature, it returns only one result row for each group. GROUP BY must be used anytime you use a column function with other columns in the SELECT. The columns in the GROUP BY statement should be every column in the SELECT statement not having a function performed on it (that is, SUM, MAX, MIN, AVG). The GROUP BY statement should follow the WHERE statement, if one exists, and precede the ORDER BY statement, if one exists. The ORDER BY statement should always come last in a query.

- Press the **RUN** key to retrieve the data (Figure 5–90).

```
REPORT                                          LINE 1      POS 1      79



  CURR
  LEN
  CODE           COL1
  ------  -----------
                 3800
  800001        10662
  800004         7040
  800241         8430
  801523         2362
  801871         3732
  802566         2500
  802567         2228
  802598         2277
  802599         2564
  802600         1500
  802601         2655
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–90, Report Panel Displaying Results of Group and AVG

The data is already grouped and averaged before any changes are made to the form. This is because we have requested average amount in the query. The report now resembles the one created using the QMF Form panels for summarizing data.

5.6.4 Using Substitution Variables

Substitution variables let you use the same query to retrieve different results by supplying different values for the substitute variables. To retrieve a different set of data, you do not need to rewrite the query, just substitute a different value for the substitution variable in the query. A substitution variable can be used in any statement of the query and can represent anything that can be written into a query, including column names, search conditions and specific values.

- Type ***DISPLAY FORMS_Q*** at the "Command" prompt.
- Press **ENTER**.

Any query previously on the SQL Query panel has been replaced. Remember, if you did not save the former query before it was replaced, it cannot be retrieved.

Enter the following query that uses a substitution variable in the WHERE statement:

```
SELECT   CURR_MAT_DT, CURR_LOAN_STAT, AMT, OUT_PRIN_BAL,
         CURR_LEN_CODE, SCH_CODE, STU_NO
  FROM   LOAN
 WHERE   CURR_LEN_CODE = &LEN
   AND   CURR_LOAN_STAT <> 'PF'
   AND   AMT > 1000
```

```
      AND    OUT_PRIN_BAL BETWEEN 0 AND 100
ORDER BY     CURR_LEN_CODE, SCH_CODE
```

The WHERE statement includes &LEN as a substitution variable. When this query runs, the Run Command Prompt panel displays, and what you enter at the prompt replaces &LEN in your query. Substitution variable names can be no longer than 18 characters, and the first character must be an ampersand (&). Although you are not required to match the column names, this makes the prompts easier to use.

- Press the RUN key to run the query.

The prompt panel displays (Figure 5–91).

```
SQL QUERY                                              MODIFIED  LINE    1
+-------------------------------------------------------------------------------+
|                  RUN Command Prompt - Values of Variables                     |
|                                                                               |
| Your RUN command runs a query or procedure with variables that need           |
| values. Fill in a value for each variable named below:                        |
|                                                              1  to 10 of 10   |
|    &LEN                                                                       |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
| F1=Help  F3=End  F7=Backward  F8=Forward                                      |
+-------------------------------------------------------------------------------+

Please give a value for each variable name.
```

Figure 5–91, RUN Command Prompt Panel

On the prompt screen, enter the Lender Code you want the query to select. The Lender Code is then returned to the query to replace &LEN. If you want to select Lender Code 899986:

- Type ***'899986'*** to the right of &LEN.
- Press **ENTER**.

Since the Lender Code column type is character, you MUST enclose the Lender code in single quotes, for example, '899986'.

The report is displayed on the screen (Figure 5–92).

```
REPORT                                          LINE 1      POS 1      79



  CURR        CURR                    OUT   CURR
  MAT         LOAN                    PRIN  LEN     SCH            STU
   DT         STAT          AMT       BAL   CODE    CODE           NO
  ----------  ----  -----------  -----------  ------  ------  -----------
  1988-07-01  RP          2500            0  899986  001002    122001636
  1988-07-01  RP          2500            0  899986  001002    122001636
  1990-12-01  RP          1200            0  899986  001002    122002066
  1992-11-01  RP          1479            0  899986  001005    207003128
  1992-11-01  RP          1147            0  899986  001005    207003128
  1988-10-01  RP          2275            0  899986  001020     37001495
  1988-10-01  RP          2500            0  899986  001020     37001495
  1988-12-01  DU          2500            0  899986  001020    122002546
  1988-12-01  DU          1137            0  899986  001020    122002546
  1989-01-01  DU          2500            0  899986  001033     37000065
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                 SCROLL ===> PAGE
```

Figure 5–92, Report Panel Displaying Results of Substitution Variables

The number 899986 is substituted in the report when the query is run.

5.6.5 Selecting on Part of a Value

To select data when only part of a value is known, use LIKE in the WHERE statement with a symbol for the unknown data. The symbols to use are:

1. **% (Percent Sign)**—Stands for "string of zero or more characters."

2. **_ (Underscore)**—Stands for "any single character." Use more than one underscore in succession to represent an exact number of missing characters.

- Type ***RESET QUERY*** at the "Command" prompt.
- Press **ENTER**.

Type this sample query at the top of the screen:

```
SELECT    NM
  FROM    SCH
 WHERE    NM LIKE '%SOUTH%'
```

This query tells DB2, "Show all the school names that have the letters SOUTH anywhere within the name."

- Press the RUN key to produce the report (Figure 5–93).

```
REPORT                                              LINE 1      POS 1      79
  NM
  ---------------------------------------------------------------------
  BIRMINGHAM SOUTHERN COLG
  ALABAMA SOUTHERN CMNTY COLG
  SOUTHERN BENEDICTINE COLG
  SOUTHEASTERN BIBLE COLLEGE
  SOUTHERN UNION STATE JUNIOR COLG
  UNIV OF SOUTH ALABAMA
  UNIV OF ALASKA SOUTHEAST
  SOUTHERN ARKANSAS UNIV
  SOUTHERN CALIFORNIA COLG OF OPTOMETRY
  SOUTHERN CALIFORNIA COLG
  SOUTHWESTERN COLG
  SOUTHWESTERN UNIV SCHOOL OF LAW
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–93, Report Panel Displaying Results of LIKE

To select any name beginning with SOUTH, type:

WHERE NM LIKE 'SOUTH%'

You can use % more than once in an expression: ***WHERE NM LIKE '%UNI%SOUTH%'***

This expression finds every name that has a UNI and a SOUTH (in that order).

Change the query to the following:

```
SELECT   NM
  FROM   SCH
 WHERE   NM LIKE '__OU%'
```

The line in '__OU%' contains two underscores.

This sample statement tells DB2, "Show all the school names that have OU in the third and fourth positions."

- Press the RUN key to produce the report (Figure 5–94).

```
 REPORT                                              LINE 1      POS 1      79
  NM
  ---------------------------------------------------------------------
  SIOUX EMPIRE COLG
  CLOUD COUNTY CMNTY COLG
  DYOUVILLE COLG
  SIOUX FALLS COLG
  STOUT STATE UNIV WILLIAMSON
  STOUDER MEM HOSP SCH OF XRAY TECH
  SIOUX VALLEY HOSPITAL SCHL OF RADIOLOGIC TECHLGY
  CROUSE IRVING MEMORIAL HOSPITAL SCHL OF NURSING
  SIOUX VALLEY HOSPITAL SCHL OF NURSING
  GLOUCESTER COUNTY COLG
  SIOUX FALLS AREA VOC TECH SCHOOL
  TROUTMANS COLG OF HAIRSTYLING
  SIOUX CITY BARBER COLG
  STOUT STATE UNIV ALL CAMPUSES
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–94, Report Panel with School Names with OU in the Third and Fourth Positions

5.6.6 Selecting Multiple Tables and Joining Columns

To select data from two or more tables, you must link the tables together (join them) on columns that contain the same kind of information. There must be some overlap of information, some common ground. For example, assume you need the loan number, the current maturity date, and the loan amount from the LOAN table; the student's first and last name from the STU table; and the school name from the SCH table. The STU_NO column in the LOAN table and the NO column in the STU table both contain student numbers. The SCH_CODE column in the LOAN table and the CODE column in the SCH table also contain school numbers. You can join the STU, LOAN, and SCH tables on these columns.

To select these tables, type the following:

```
SELECT   A.NO, CURR_MAT_DT, AMT,
         CURR_FST, CURR_LST, NM
  FROM   LOAN A, STUDENT B, SCH C
 WHERE   A.STU_NO = B.NO AND A.SCH_CODE = C.CODE
   AND   AMT > 1000
```

- Press the **RUN** key.

The query produces the report (Figure 5–95).

```
REPORT                                          LINE 1      POS 1       79



               CURR
               MAT                         CURR          CURR
         NO     DT               AMT       FST           LST
  -----------  ----------  -----------  ------------  ------------------------
    211111111  1998-01-01        12000  CHARLES       JENKINS
    355555555  1998-01-01        12000  ABEL          JENKINS
     37001503  1989-06-28         2500  SHARON L      DARIAH
    777777777  1993-06-07         7040  JIM           JONES
     37001503  1989-06-28         1800  SHARON L      DARIAH
    122001636  1988-07-01         2500  ROSE MARIE    JNOFINN
    122001636  1988-07-01         2500  ROSE MARIE    JNOFINN
    122002066  1990-12-01         1200  JAMES         FORD
    122002066  1990-12-01         2000  JAMES         FORD
    122002157  1989-11-01         1500  CHARLES       ALEXIS
    171717171  1993-06-07         7040  JOHN          STONE
    200000310  1993-06-07         7040  STEVE         SMITH
1=Help         2=            3=End        4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form      10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–95, Report Panel Displaying Results of JOIN

- Press the **RIGHT** key to scroll right to view the school name.

5.6.7 Using UNION to Merge Data from Two or More Tables

You can merge values from two or more tables into the same columns, but different rows, of the same report by using the UNION command.

Each query connected by UNION is executed to produce an answer set. Then, these answer sets are combined and duplicate rows are eliminated.

Merging data using UNION differs from joining data: When tables are merged, values are merged into different rows, but into the same columns. When tables are joined, values are merged into the same rows, but different columns.

The important thing to remember when using UNION is that you are interleaving the rows of the reports generated from two (or more) queries.

You can keep duplicates in the result of a UNION operation by specifying the optional keyword ALL after UNION. When UNION ALL is specified, redundant duplicate rows are not eliminated from the result.

If you use an ORDER BY clause in a UNION operation, you need to use a column number after ORDER BY. Using a column name after ORDER BY is invalid.

You can use UNION between two SELECT statements if these conditions are satisfied:

1. The two statements select the same number of columns.

2. Corresponding columns selected by the two statements have the same data type and width and, for decimal data, the same number of decimal places.

3. Corresponding columns either both allow null values, or both disallow them.

The lengths and data types of the columns named in the SELECT statement need only be comparable; that is, they must both be numeric, character, graphic, date, time, or timestamp values. They cannot be a mixture of these groups.

The following example selects similar columns from the GA and LENDER tables and merges them into one report.

To list the names of all guaranty agencies and all lenders in one report sorted alphabetically:

- Type ***RESET QUERY***.
- Press **ENTER**.

On the SQL Query panel, type:

```
SELECT    NM, 'GA'
  FROM    GA
          UNION

SELECT    NM, 'LENDER'
  FROM    LEN
```

- Press the **RUN** key.

The portion of the example query that selects from GA also creates a column in the report with the constant GA in it. The portion of the query that selects from LENDER does the same with the constant LENDER (Figure 5–96).

```
REPORT                                          LINE 1      POS 1      79


  NM                                       COL1
  ---------------------------------------  ------
  A B DICK COMPANY EMPLOYEES FEDERAL       LENDER
  A C E CREDIT UNION                       LENDER
  A M EMPLOYEES CREDIT UNION INC           LENDER
  A P PARTS EMP F C U                      LENDER
  A.E.A. FEDERAL CREDIT UNION              LENDER
  A&P - FARMER JACK CREDIT UNION           LENDER
  A-B CREDIT UNION OF MILWAUKEE            LENDER
  A-M COMMUNITY CREDIT UNION               LENDER
  AA FEDERAL CREDIT UNION                  LENDER
  AAA EMPLOYEES FEDERAL CREDIT UNION       LENDER
  AAA FEDERAL CREDIT UNION                 LENDER
  AAA LIFE INSURANCE CO                    LENDER
  AAC CREDIT UNION                         LENDER
  AAFES FEDERAL CREDIT UNION               LENDER
1=Help         2=            3=End       4=Print       5=Chart        6=Query
7=Backward     8=Forward     9=Form     10=Left       11=Right       12=
OK, this is the REPORT from your RUN command.
COMMAND ===>                                              SCROLL ===> PAGE
```

Figure 5–96, Report Panel Displaying Results of the UNION Command

5.6.8 Tablespace Request Procedures

There are times when you have to run multiple queries against a few columns and rows in a large table in the database. Rather than select from the entire table, you can create your own personal table using the data from the large table. The table you create has fewer columns and rows, allowing your queries to run more efficiently.

5.6.8.1 Saving Data into a Table

DB2 allows users to create their own personal tables in the database. The data selected with a query can be saved into you own personal DB2 table using the SAVE DATA command. All rows selected by the query are saved into the database using the table name you specify. You are the owner of the table since you created it. As the owner, you have complete control over the table. The data within the table can be changed, used for additional querying, or even joined with other DB2 tables.

The table is saved in the assigned tablespace. If the data you are saving exceeds 25,000 rows, you need to contact the Customer Service Center for help in saving the data. When you are saving a large amount of data (25,000 rows or more), additional steps have to be taken for system efficiency. It is very important these steps be taken so the system runs better not only for you, but for other users as well.

- Type ***RUN FORMS_Q***.
- Press **ENTER**.

The data selected by the query is displayed on the screen in report format.

If you want to save the data into your own personal DB2 table, do the following:

- Type ***SAVE DATA AS DATA*** at the "Command" prompt.
- Press **ENTER**.

A table is now stored in the database. The table DATA can now be used in the FROM statement of any query. When referring to the table, leave off the owner. DB2 assumes that when the owner name does not precede the table name, the userid running the query is the owner.

The columns in the saved table are determined by the query you ran. The names of the columns in the table are determined by the form.

5.6.8.2 Erasing a Table

If you have saved data into a table and decide you no longer need the information, you should delete the table from the database. The command to erase a table is ERASE tablename.

- Type ***ERASE DATA*** at the "Command" prompt.
- Press **ENTER**.
- Press **END** key to return to the *QMF Home Panel*.

You can only erase a table if you are its owner or creator.

5.6.9 Procedures

Occasionally you may need to produce a report on a regular basis using a series of QMF commands. You could execute these steps together as one task by creating a procedure. A procedure, or PROC, allows users to execute a set of QMF commands by entering a single RUN command. An advantage of a procedure is that it reduces the amount of typing required, saving considerable time.

Assume you have a set of reports you run every Monday morning. You currently issue four commands on the QMF command line; they are:

1. RUN BASIC_Q
2. QPRINT RMDS BASQ
3. RUN FORMS_Q
4. QPRINT RMDS FMRQ

These commands can be put into a procedure. Then, when you run the procedure, the four commands are executed by issuing one command.

5.6.9.1 Creating a Procedure

To create a procedure:

- Press the **PROC** key from the *QMF Home Panel*, or type ***SHOW PROC*** or ***DI PROC*** from the command line on a QMF panel.

A blank screen resembling a SQL Query panel displays, but notice the word PROC in the top left corner in Figure 5–97.

```
PROC                                                          LINE    1




*** END ***


1=Help       2=Run        3=End         4=          5=Chart       6=Query
7=Backward   8=Forward    9=Form       10=Insert   11=Delete     12=Report
OK, PROC is displayed.
COMMAND ===>                                                SCROLL ===> PAGE
```

Figure 5–97, PROC Panel

Each QMF command to be executed should be entered in the blank area on a separate line.

- Press **ENTER** to move the cursor to the top of the screen.
- Type the following on separate lines:

  RUN BASIC_Q
  QPRINT RMDS BASQ
  RUN FORMS_Q
  QPRINT RMDS FRMQ

- Press the **RUN** key to run the procedure after all the commands are entered.

Each individual QMF command is executed in the order it was typed. Since you are running the commands through a procedure, you do NOT see any reports displayed on your screen. Only the final report is displayed once the PROC is finished. A procedure does not stop running until the end is reached or an error occurs.

5.6.9.2 Saving a Procedure

After you have created the PROC, you may wish to save it for later use. QMF does not keep a copy of your PROC to use later unless you save it. If a PROC hasn't been saved, and you change the PROC and rerun it, the former copy of the PROC is lost.

- Type ***SAVE PROC AS MONDAY_P***.
- Press **ENTER**.

PROCs can be stored in the database with specific names. The name cannot be the exact same as any previously saved form or query. If the name of the procedure is the same as a previously saved procedure, a prompt appears verifying that you want to replace the saved PROC. A PROC can be saved from any QMF command line.

5.6.9.3 Running a Procedure

A procedure can be run from the QMF command line using the RUN command.

- Press the **END** key to return to the Home panel.
- Type ***RUN MONDAY_P*** at the "Command" prompt.
- Press **ENTER**.

Each line of the procedure is executed, and the final report is displayed on your screen.

5.6.10 Getting General Information in QMF

- Press the **END** key to display the *QMF Home Panel*.

5.6.10.1 Listing All the Tables You Can Access

You may want to find out the names of all the tables you can access. We have used the LIST command to determine which queries and forms we have saved. The LIST command can also be used to list all tables you have access to. There are four main variations of the LIST TABLES command:

1. All tables you have created
2. All tables you have access to
3. All tables a certain user created and has given you access to
4. All accessible tables created by a certain user containing a certain character string in the table name

To list all the tables you have created in the database:

- Type ***LIST TABLES***.
- Press **ENTER**.

If you have not created any tables, you get an error message saying there were no objects found to satisfy your LIST command. When all the options are omitted from the LIST TABLES command, QMF assumes that you are looking for a list of tables that you have access to or created. You can also use a prompt panel to display a list.

- Type ***LIST ?*** at the "Command" prompt.
- Press **ENTER**.

This displays a prompt panel which asks for the type of list (in this case you would type ***Table***), the owner, and the name. The prompt panel gives you information to help you fill out the fields.

- Press **ENTER** to display the list.

When you have a list of tables displayed, the Describe and Comments keys give you information about any of the tables.

5.6.10.2 Listing All the Columns in a Table

If you know the table you want to work with, but do not know all the column names, QMF can provide the column names for you. You can use the DRAW command to determine which columns exist in the table and what each column is called. The DRAW command must be issued from a blank *QMF SQL Query Panel*.

5.6.11 General Tasks in QMF

5.6.11.1 Interrupting a Query

When you run a query, a special panel called DATABASE STATUS PANEL displays (Figure 5–98).

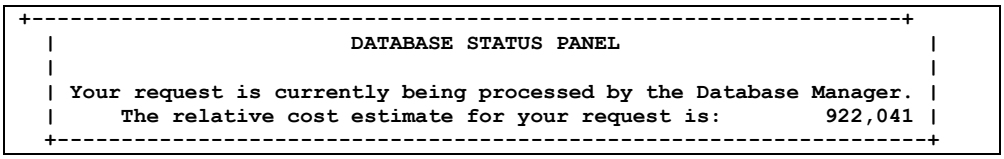

Figure 5–98, Database Status Panel

If the query is taking too long to run or you want to change your query:

- Press the **ESC** key.
- Press the **PF1** key (or the equivalent key or keys on your terminal) while the *Database Status Panel* displays.

QMF then tries to interrupt the RUN QUERY command, and you should see this message:

"DSQ50465 QMF command interrupted! Clear screen and press ENTER."

After you press **CLEAR** and then **ENTER** (or the equivalent key or keys on your terminal), the screen shown in Figure 5–99 displays.

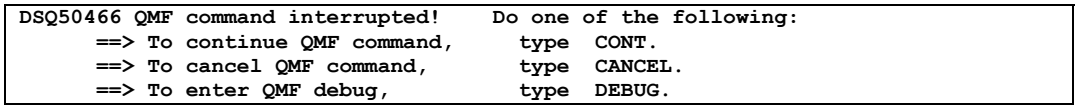

Figure 5–99, QMF Command Interrupted Panel

To cancel the running of your query:

- Type ***CANCEL***.
- Press **ENTER**.

There are provisions to automatically interrupt or cancel a query that takes too long to run. If your query exceeds a time limit or retrieves an excessive number of rows, processing may be interrupted returning you to the *SQL Query panel*. The following message is displayed: "Query did not run. See SQL Query panel for error message." From this panel you can press the Help key. The following message is displayed: "An unsuccessful execution due to resource limit being exceeded." The SQL CODE in the bottom right corner is -905. When this error occurs, you should contact the Customer Service Center for help on revising your query.

5.6.11.2 Retrieving a Previously Entered Command

You can save keystrokes by using RETRIEVE (RET is the minimum unique abbreviation) to re-display text that you have previously entered at the "Command" prompt. You can also enter ? (or multiple question marks) at the "Command" prompt to achieve the same result. One question mark (?) retrieves the most recent command you entered, two question marks (??) the command before that, and so on.

If you used a function key to perform an action and enter ? at the "Command" prompt, the last command issued at the "Command" prompt is retrieved, not the command executed by the function key.

5.6.11.3 Batch Facility

A QMF batch facility is available for executing queries or procedures in the TSO batch mode. Batch is a way to run a query or procedure in the background. You can issue a query or procedure to execute through batch and still have your terminal available for other activities. The batch facility is executed by issuing the BATCH command.

- Type BATCH at the "Command" prompt.
- Press ENTER.

This displays the "Query/PROC Batch Panel" prompt (Figure 5–100), which allows you to enter the desired query or PROC to be run in batch mode.

```
------------------------ QUERY/PROC BATCH PROMPT ----------------------------


 OBJECT NAME    ===>                                 Name of query or procedure
       OR
 Current OBJECT ===>  NO          Save As ===>

 QUERY or PROC  ===>  QUERY


   For Procedure
      Arguments ===>


   For Query
      FORM  NAME     ===>
           OR
      Current FORM   ===>  NO       Save As ===>



PF1=Help PF3=End  Enter=Process batch request
```

Figure 5–100, Query/PROC Batch Panel

- **OBJECT NM**—Name of the saved query or procedure.

- **CURRENT OBJECT**—Must either be YES or NO. If YES is specified, the current object in temporary storage is used. If NO is entered, the name in OBJECT NM is used.

- **SAVE AS**—This option only applies if CURRENT OBJECT is YES. This is the name for the current query or PROC to be saved as.

- **QUERY OR PROC**—Denotes the type of object to run; must be either QUERY or PROC.

- **ARGUMENTS**—Applies only when the object type is PROC. Any option arguments that should be passed to a procedure using logic.

- **FORM NM**—Applies only when the object type is QUERY. The name of a saved form to be used with the query. This is an optional prompt.

- **CURRENT FORM**—Must either be YES or NO. If YES is specified, the current form object in temporary storage is used. If NO is entered, FORM NM is used.

- **SAVE AS**—This option only applies if CURRENT FORM is YES. This is the name for the current form to be saved as.

Queries run from batch mode cannot contain a substitution variable.

- Type ***BASIC_Q*** beside OBJECT NM.
- Type ***QUERY*** beside QUERY or PROC.
- Press **ENTER**.

When the BATCH facility is used to run a query, the Select Output Destination panel displays (Figure 5–101).

```
---------------------- SELECT OUTPUT DESTINATION  ----------- Row 1 to 8 of 8
COMMAND==>                                                    SCROLL==>  PAGE

REPORT ID      ==>                                          10/26 10:15
REMOTE PRINTER ==>

S  PRINTER   DEF   DESCRIPTION
. WAN              SEND TO T4 WAN MAILBOX
. DISKETTE         OUTPUT TO PC DISKETTE
. DOWNLOAD         DOWNLOAD TO PC FILE
. HP683            NSLDS CUSTOMER SERVICE CENTER
. L3800            VIRTUAL DATA CENTER HIGH SPEED PRINTER
. RMDS             ON-LINE REPORT DISPLAY
. RMT201           FALLS CHURCH DEVELOPMENT OFFICE
. TAPE             OUTPUT TO MAGNETIC TAPE
****************************** Bottom of data ********************************




 F1=HELP      F2=SPLIT     F3=END       F4=QPRINT    F5=          F6=
  F7=UP        F8=DOWN      F9=SWAP     F10=         F11=         F12=RETRIEVE
```

Figure 5–101, Select Output Destination Panel

The user can select a destination and report ID for the report. This panel has the same options as the output facility and works in the same manner. When the options are filled in, F4 or the command QRETURN submits the query and routes the output to the selected destination.

- Type ***QMF1*** beside REPORT ID. REPORT ID is a four-character string used to identify the report at the given destination.
- Type ***S*** beside RMDS.
- Press **ENTER**.
- Type ***QPRINT*** at the "Command" prompt.
- Press **ENTER**.

The query is now submitted to batch. The data is produced and the output is sent to designated destination. You are now able to use your terminal for other activities while the query is being processed.

5.6.11.4 Running a PROC from BATCH

QMF batch can also be used to execute procedures. There are some rules and restrictions to writing batch mode procedures:

1. QMF cannot prompt the user, so avoid any situations that cause prompts. The best way to do this is to begin all procedures run through batch with the command SET PROFILE (CONFIRM = NO.
2. The PRINT command should not be used within a batch procedure. The QPRINT command should be used instead. If the QPRINT command is specified without parameters within the procedure, or if the QPRINT command is omitted from the batch procedure, the QMF Output Destination screen displays so the user can select a destination. This is the same panel you see when you issue the QPRINT command or F4 from the Report panel. (Refer to the section "Printing the Report" for additional information on the Output Destination panel.) F4 or QRETURN from this screen submits the procedure just as it does in the query. The Destination and Report ID specified in the "Output Distribution" prompt is used for all QPRINT statements omitting the parameters.
3. Never use the name BATCH when saving a procedure.

5.7 QMF Help

Whether you are writing queries, formatting reports, editing a table, or creating procedures, QMF provides online help for all its functions. QMF Help lets you see information about QMF while you are using QMF. This information appears on the bottom half of your screen in a scrollable window. To locate help information, press the Help key from anywhere within QMF.

QMF Help is like a tree: the *Help—Query Management Facility* menu panel is the trunk, and the major topics menus are the major branches. These major topic menus branch to smaller menus and specific topic panels.

QMF Help varies slightly in how it allows you to access information, depending upon what part of QMF you are using.

5.7.1 Help from the Home Panel

This help panel appears on the bottom half of your screen if you press the Help key from the *Home Panel*. The QMF Help panel is shown in Figure 5–102.

```
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All Rights Reserved.
IBM is a registered trademark of International Business Machines
+-------------------------------------------------------------------------------+
|                       Help: Query Management Facility                         |
|                                                                               |
| Select a topic.                                                               |
|                                                              1  to 7  of 15   |
|     1. What's new in QMF Version 6                                            |
|     2. Learning about QMF                                                     |
|     3. Profile                                                                |
|     4. QMF commands                                                           |
|     5. Prompted Query                                                         |
|     6. SQL (Structured Query Language)                                        |
|     7. Table Editor                                                           |
+-------------------------------------------------------------------------------+
| F1=Help  F3=Exit  F7=Backward  F8=Forward  F9=Keys  F12=Cancel                |
+-------------------------------------------------------------------------------+


OK, HELP performed. Please proceed.
```

Figure 5–102, QMF Help Panel

The Help—Query Management Facility panel is an overview menu for QMF Help. This menu lists the major topics offered by QMF Help. To see the entire list of topics, you can scroll forward by pressing the Forward key. You can select any one of these topics by typing its number and pressing ENTER.

5.7.2 Help Creating SQL Queries

If you do have questions while writing a SQL query, help is available; just press the Help key (Figure 5–103). When you press the Help key while writing a SQL query, the first thing you see in the pop-up panel is a table of contents (which you have to scroll to view in its entirety).

```
SQL QUERY                                          MODIFIED  LINE    1

SELECT AMT,CURR_LEN_CODE
FROM LOAN
ORDER BY AMT
+-------------------------------------------------------------------------------+
|                         Help: SQL Query -- Contents                           |
|                                                                               |
| Select a topic or topic word (              )                                 |
|                                                          1  to 6  of 77       |
| CREATING AND USING QUERIES                                                    |
|    1.  Composing and entering a query          compose                        |
|    2.  Inserting a line in a query             qinsert                        |
|    3.  Deleting a line from a query            qdelete                        |
|    4.  Creating a query using the DRAW command  DRAW                          |
|    5.  Scrolling a SQL query                   scroll                         |
+-------------------------------------------------------------------------------+
| F1=Help  F3=Exit  F5=Menu  F7=Backward  F8=Forward  F9=Keys  F11=Index        |
| F12=Cancel                                                                    |
+-------------------------------------------------------------------------------+


OK, HELP performed. Please proceed.
```

Figure 5–103, SQL Query Help Panel

If an error message is displayed on the message line of the SQL Query panel, pressing the Help key displays a Help Panel pertaining to the error message rather than to create queries.

Here you can find any aspect of SQL query writing you might want to know about. You are able to display any one of these help topics by typing either the corresponding number or its keyword (the word on the right part of the panel) in the input area.

A keyword in a SQL query is a pre-defined word that has special meaning or function. For example, SELECT is the keyword used to retrieve data from a table.

If you know the name of a keyword you want to learn about, you might prefer using the index instead of the table of contents. To do so, press the Index key. The dialog panel for the SQL alphabetical index appears, listing topic names and numbers. To find the topic you need, enter the first letter of the keyword in the entry field. For example, you can enter an ‘S’ to go to the S’s in the index. Scroll forward until the keyword appears, then enter the topic number (adjacent to the topic) in the entry field to access the Help Panel for that topic.

5.7.3 Help Using QMF Forms

As you have seen, there are many variations possible in formatting your report. You can change values on the form and display the report to see what effect your changes have made without having to rerun your query.

As you practice changing forms and displaying the reports to see what effect your changes have made, there are two tools to help you: HELP and CHECK.

5.7.3.1 Help

If you are not sure what changes can be made to any of the form panels, press the Help key when viewing the form panel in question. This displays a help panel.

If your cursor is in a specific Form Panel field when the Help key is pressed, a Help Panel related to the field displays. If an error message is displayed on the message line of the Form Panel, pressing the Help key displays a Help Panel pertaining to the error message rather than the form object.

5.7.3.2 Check

If QMF detects something wrong in the data you enter on one of the form panels, either WARNING or ERROR is displayed at the top of that form panel. To find out what is causing the problem, press the CHECK key.

The cursor is then positioned at the first field causing the error or warning. The message on the message line refers to the error or warning.

After correcting the problem, press the CHECK key to display the next error or warning message (if any).

5.8 QMF Function Key Descriptions

QMF Home Panel	
1=Help	Displays an index that prompts you to select a topic. The information appears on the screen as a scrollable help panel within a window.
2=List	The first time you issue the LIST command in a QMF session, the object type (queries, forms, etc.) must be specified. The most recently generated object list remains in temporary storage until you execute the LIST command again or end the QMF session.
3=End	ENDs a current operation and returns to an earlier menu or panel.
4=Show	Navigates among QMF object panels.
5=Chart	Displays a chart of the data currently in temporary storage.
6=Query	Displays the current QUERY panel.
7=Retrieve	Re-displays commands that were entered on the command line.
8=Edit Table	Displays EDIT TABLE Command Prompt. The name of the table to be edited is entered on this panel. Tables that are owned by you (as creator) are the only tables you have authority to edit.
9=Form	Displays default form.
10=Proc	Displays the PROC panel. A Procedure lets you execute a series of QMF commands with a single RUN command.
11=Profile	Your profile is general information kept in the database that describes your interaction with QMF. It tells QMF what data entry and presentation options to automatically specify for you.
12=Report	Displays the report generated by a query. You must run the query first in order to create the report.

SQL Query Panel	
1=Help	Displays information about the SQL Query panel.
2=Run	Displays the query from temporary storage.
3=End	Ends a current operation and returns to an earlier menu or panel.
4=N/A	
5=Chart	Displays a chart of the data currently in temporary storage.
6=Draw	Creates a basic SQL query.
7=Backward	Scrolls toward the top of the panel.
8=Forward	Scrolls toward the bottom of the panel.
9=Form	Displays the form currently in temporary storage.
10=Insert	Inserts a line into the SQL Query Panel at the cursor position.
11=Delete	Deletes a line from the SQL Query Panel at the cursor position.
12=Report	Displays the report generated by the query.

Prompted Query Panel	
1=Help	Displays information about Prompted Query.
2=Run	Runs current query and displays a report.
3=End	Ends a current operation and returns to an earlier menu or panel.
4=Show SQL	Displays the SQL equivalent of the displayed Prompted Query.
5=Change	Lets you change a column, condition, sort, or duplication row specification in your query.
6=Specify	Displays the Specify Dialog panel.
7=Backward	Scrolls toward the top of the query in the echo area.
8=Forward	Scrolls toward the bottom of the query in the echo area.
9=Form	Displays the current form.
10=Insert	Inserts a line into your query at the cursor position.
11=Delete	Deletes a line from your query at the cursor position.
12=Report	Displays the report generated by your query. You can view the report after the query has been run.

QBE Query Panel	
1=Help	Displays information about the QBE query panel.
2=Run	Runs your current query and displays a report.
3=End	Returns you to the QMF home panel.
4=Enlarge	Enlarges a table, comments box, or conditions box, or adds a new column.
5=Reduce	Reduces a table, comments box, or conditions box, or removes a column.
6=Draw	Creates a sample QBE table.
7=Backward	Scrolls toward the top of the panel.
8=Forward	Scrolls toward the bottom of the panel.
9=Form	Displays the form currently in temporary storage.
10=Left	Scrolls toward the left of the table.
11=Right	Scrolls toward the right of the table.
12=Report	Displays the report generated by a query.

PROC Panel	
1=Help	Displays information about the PROC panel.
2=Run	Displays the report generated by a query. The query must be run first in order to create the report.
3=End	Returns you to the QMF home panel.
4=N/A	
5=Chart	Displays a chart of the data currently in temporary storage.
6=Query	Displays the query currently in temporary storage.
7=Backward	Scrolls toward the top of the panel.
8=Forward	Scrolls toward the bottom of the panel.
9=Form	Displays the form currently in temporary storage.
10=Insert	Inserts a blank line into a procedure at the cursor position.
11=Delete	Deletes a line from a procedure at the cursor position.
12=Report	Runs the procedure that is currently in temporary storage.

5.9 QMF Commands

Command	Description
ADD	Adds rows to a table in the Table Editor. Adds global variables to the global variable list.
BACKWARD (BACK)	Scrolls toward the top of a scrollable area.
BOTTOM (BOT)	Scrolls to the end of your data or a report.
CHANGE	In Prompted Query, changes entries on a panel. In the Table Editor, modifies rows in a table or view.
CHECK	Checks form panels for mistakes.
CONVERT	Converts a relational prompted, SQL, or QBE query to a query with standard SQL syntax.
DELETE	Removes any of the following: • A line from an SQL query or a procedure; • A line from a panel in Prompted Query; • A line of column information on FORM.MAIN or FORM.COLUMNS; • A calculation line from a FORM.CALC panel; • A text line on FORM.BREAK, FORM.DETAIL, FORM.FINAL, or FORM.PAGE; • Error messages displayed below a query; and • A row from a table (using the Table Editor).
DISPLAY (DI)	Displays an object in temporary storage or in the database.
DRAW	Helps compose a basic SQL query from an SQL or QBE query panel.
EDIT (ED)	Lets you edit: • A QMF procedure or an SQL query in temporary storage, and • A table in the database (using the Table Editor).
END	Ends the current operation and displays the previous panel.
ERASE	Removes an object from the database.
EXPORT	Sends: • Queries, forms, procedures, reports, charts, and data from temporary storage to a TSO data set; and • Queries, forms, procedures, and tables from the database to a TSO data set.
FORWARD (FOR)	Scrolls toward the bottom of a scrollable area.
GET GLOBAL	Assigns values of QMF global variables to REXX variables in applications and procedures written in REXX.
HELP	Displays information about QMF.
IMPORT	Copies a TSO data set into temporary storage or into the database.
INSERT	Inserts a text line on a form panel, a column description line on a FORM.MAIN or FORM.COLUMNS panel, a line for a report calculation expression on a FORM.CALC panel, or a line on an SQL query, relational prompted query, or PROC panel.
INTERACT	Indicates that the QMF following it should be executed interactively; that is, provides access to confirmation and prompt panels.

Command	Description
LAYOUT	Creates a sample report when the data for that report is not yet available. This way you can visualize how your final report will look.
LEFT	Scrolls toward the left boundary of a QBE query or report panel.
LIST (LI)	Displays a list of QMF objects stored in the database. When a list is created, it exists throughout the QMF session or until a new list is requested using the LIST.
MESSAGE	• Displays a message from the ISPF library. • Generates QMF-like messages when an application ends. • Stops running a QMF procedure.
NEXT	• Navigates forward through the set of variations associated with the FORM.DETAIL panel, • Displays the next column or the next definition when the form definition is displayed, and • Displays the next row in the set of accessed rows in the Table Editor.
PREVIOUS (PRE)	• Navigates backward through the set of variations associated with the FORM.DETAIL panel, • Displays the previous column or the previous definition when the form definition is displayed, and • Displays the row just added (Add Mode) or the most recent successful search criteria (Search Mode).
PRINT	Prints a copy of an object in temporary storage or an object stored in the database.
RESET object (RE)	Restores an object to its initial state.
RESET GLOBAL	Deletes the names and values of global variables that have been set using the SET GLOBAL.
RIGHT	Scrolls toward the right boundary of a QBE query or report panel.
RUN	Runs a procedure or query.
SAVE	Stores the contents of a temporary storage area into the database.
SET GLOBAL	Assigns values to global variables from the QMF line, from a procedure. You can define up to 10 substitution variables from the QMF line or in a procedure.
SET PROFILE	Changes values in your QMF profile. SET PROFILE is most useful within a procedure.
SHOW	Navigates among QMF object panels. Shows function keys are available on some panels to display fields that are too long to fit on the base panel or to display the SQL translation of a relational prompted query.
SPECIFY	In Prompted Query, displays a list from which you can specify the panel you want to see.
TOP	Scrolls to the beginning of: • Your data, and • A report.
TSO	Lets you issue a command in the MVS environment without terminating your use of QMF.

5.10 RMDS Form IDs

Organization	Division/Service	Form IDs

Organization	Division/Service	Form IDs
Office of the General Counsel	Operations Office	NCOO
Office of the Inspector General	Director, Administrator Services	NOIG
Office of Management and Budget	Chief Financial Officer	NCFO
Office of The Chief Financial Officer	Credit Management Improvement Staff	NCMI
Office of the Undersecretary	Program Budget Execution Branch	NPBE
	Postsecondary Analysis Division	NPAD
	Budget Service	NBUD
	Planning and Evaluation Services Division	NPES
Office of Student Financial Assistance Programs	Policy Development Staff	NPDS
	Chief, Executive Office	NCEO
Office of Student Financial Assistance Programs	Policy, Training and Analysis Service	NPTA
	Program Systems Services	NPSS
	Institutional Participation Oversight Service	NIPO
	Quality Improvements and Operations Planning Staff	NQIO
Office of Student Financial Assistance Programs/Field	Region I Program Assistant	NF01
	Region II Program Assistant	NF02
	Region III Program Assistants	NF03
	Region IV Program Assistants	NF04
	Region V Program Assistant	NF05
	Region VI Program Assistant	NF06
	Region VII Program Assistant	NF07
	Region VIII Program Assistant	NF08
	Region IX Program Assistant	NF09
	Region X Program Assistant	NF10
	Debt Collection Service	NDCS
	Guarantor and Lender Oversight Staff	NGLO
	Accounting and Financial Mgmt.	NAFM
Price Waterhouse	Systems Operational Support	NSOS


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